The RUBBER AGE

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VOL. 22, NO. 5 DECEMBER 10, 1927

Local Groups of Rubber Technologists Now Being Organized

Chairmen Are Appointed to Get Sections Formed in Akron, Boston, New York and Los Angeles—New York Section to Hold First Meeting January 11 With F. R. Henderson as Speaker—All Technologists and Others Interested Are Being Urged to Attend

THE first vital step has been taken in the plan of the Rubber Division of the American Chemical Society for forming local groups of rubber chemists and associated technologists in at least four cities in the United States. Chairman H. L. Fisher has announced the appointment of four prominent members of the Division in as many cities to begin immediately the work of organizing the local groups and arranging the programs for this winter.

Group Chairmen Named

The first four cities where local groups will be formed, and they are probably the only ones in which such work will be undertaken for sometime, will be Akron, Boston, New York and Los Angeles. Chairmen for the preliminary work in these cities have been announced by Dr. Fisher as follows: Akron, R. P. Dinsmore; Boston, C. R. Boggs; New York, A. A. Somerville; and Los Angeles, R. B. Stringfield.

Since these appointments have been made within the last fortnight, the chairmen have not had an opportunity to get much organization work done in their respective cities. Each will be left free to work out the problem according to his own ideas. The basic idea controlling all the work is that the rubber chemists shall have more frequent meetings and that junior chemists and all rubber plant technologists shall be urged to join with them.

The New York group shows the best prospects of getting underway within the next few weeks. In fact, Dr. A. A. Somerville, the local chairman, has already completed many of his plans for the first meeting in his city. The meeting will be held during automobile show week, on January 11. As a speaker for the first evening he has secured Francis R. Henderson, president of the Rubber Exchange of New York, who will outline for the technical men "The Buying and Selling of Crude Rubber."

It will be the more technical aspects of crude rubber trade to which Mr. Henderson will give his attention. In deciding on such a subject for the first New York local meeting, Dr. Somerville feels that Mr. Henderson's explanation of crude rubber trading will interest every technologist and at the same time give evidence of the breadth of subject matter which will come before the local sections.

The first New York meeting will be held at the Town Hall Club, beginning at about 6:30 in order to allow an hour for getting acquainted before the informal dinner begins at 7:30. Mr. Henderson's speech will begin at 8:30 or shortly thereafter. Following the speech and the discussion, for which adequate time will be allowed, some details of group organization, particularly the selection of a secretary-treasurer, will be given attention.

A. A. Somerville
Chairman of the New York Group

General Invitation Extended

The invitation to the first New York meeting is being made very general and Dr. Somerville anticipates a large attendance. While no sharp lines have been drawn as to the boundaries of the territories from which the local groups shall draw their members, it is felt that the New York section will naturally serve rubber chemists and technologists in the states of New York, New Jersey and Connecticut. All of the present members of the Rubber Division who are within this territory, and others besides if they find it convenient, are expected to attend the meeting, but what is just as important, they are expected to see that their fellow chemists and technologists who may not be members of the Division, accept the New York meeting as their opportunity for valuable contacts and acquisition of information.

According to Dr. Somerville, the New York section will interpret the term "technologist" loosely and will in fact be prepared to welcome to its meetings any members of the rubber industry who are interested in attending. A large attendance at the first meeting is expected. While Rubber Division members will be inviting their non-member friends to attend the meeting,

the chairman has expressed his hope that no one will hesitate to come without a special invitation. Many representatives of the numerous chemical supply houses in New York are expected to attend. It is contemplated that the local meetings will be particularly interesting to such men as laboratory workers, testing assistants, etc., who would have liked to attend the semi-annual meetings of the Rubber Division in the past but have been prevented from doing so by expense and the necessity of staying on the job while higher ranking employees made the trip.

The cost of the first meeting, as well as succeeding meetings, will be kept low so that the element of expense need keep no one away. In fact, the only cost will be that of the dinner, probably $1.50 or $2.00. Other meetings may or may not start with dinner but for the first meeting it has been considered best to afford such an opportunity for getting acquainted before the speaker is introduced.

Season's Program Uncertain

What will constitute a season's program for a local section of the Rubber Division has not been decided and probably no hard and fast rule will be laid down. Instead, the frequency of meetings will depend upon the interest which develops in the various localities. The New York section expects to hold at least one more meeting after the one in January. At the last meeting of the season officers for next year will be elected.

Plans for the first meetings in Boston, Akron and Los Angeles are expected to be announced soon and probably before the end of January all four of the local groups will have been launched. Members of the Rubber Division who are taking a particular interest in the new development are in general comparing the plan with that followed by the Institution of the Rubber Industry in Great Britain. In addition to central meetings of that organization in London, sectional meetings are held in London, Birmingham, Manchester and Edinburgh. Usually only one paper is read in an evening so that the time for discussion is always ample. The plan has worked out very well for the British rubber men and similar success is anticipated in this country.

D. H. Killeffer, New York representative of the American Chemical Society, will cooperate with the New York group of rubber chemists in the effort to make the first meeting a distinct success.

RAY BLANCHARD has been appointed production manager of all manufacturing divisions of the Hood Rubber Company, according to an announcement by Frederic C. Hood, president of the company.

Mr. Blanchard, who is in his early thirties, is one of the youngest executives in the rubber industry to hold such an important position.

— Names in the News —

T. R. HEWLETT and T. H. HEWLETT of the Anchor Chemical Company, Manchester, England, British distributors of R. T. Vanderbilt Company, recently returned to England after a two weeks' stay in this country as guests of Vanderbilt.

KENNETH W. WOLCOTT, who has been with the Goodyear Tire and Rubber Company for the past fifteen years and has managed their shoe and heel division for the last six years, has been appointed manager of the shoe and heel division of the B. F. Goodrich Company, assuming his new duties as of October 1.

Kenneth W. Wolcott

H. S. SMITH, of the Firestone Tire and Rubber Company, Akron, talked before the Willoughby, Ohio Chamber of Commerce on November 21, on the manufacture of rubber from the plantation to the finished product and illustrated his lecture with moving pictures of the industry.

JOHN J. SHEA, treasurer of the Firestone Tire and Rubber Company, Akron, was married on November 15, to Miss Agnes Saunders, also of Akron. They are spending their honeymoon in the East.

JOHN H. KELLY, formerly assistant superintendent of the Converse Rubber Shoe Company, has joined the manufacturing division of the Firestone Footwear Company, Hudson, Mass., where has commenced his duties December 1. Mr. Kelly has had a wide experience in the rubber field, being formerly with the Rubber Regenerating Company at Mishawaka, Indiana, and the Mishawaka Rubber and Woolen Manufacturing Company in the same city before joining Converse in 1922. He comes from a well known rubber family, being son of Kelly of Poel and Kelly, and brother of W. J. Kelly, research chemist with Goodyear for many years, and more recently engaged in research in Philadelphia.

DONALD HUTTON, research chemist with the Miller Rubber Company, Akron, has resigned to pursue further graduate work at the University of Chicago.

HOWARD A. HERTY has been appointed advertising manager of the Manhattan Rubber Company, Passaic, N. J. Mr. Herty has been with the company fourteen years and until recently was assistant branch manager at Boston.

ANDREW ANDERSON, of the Lambert Tire and Rubber Company, Akron, will handle eastern sales, including the New England states for his company.

W. W. BURRELL will make his headquarters at Kansas City as manager of the southwestern district for Diamond-Brunswick. Mr. Burrell was previously assistant manager, stationed at B. F. Goodrich Company's office at Akron.

ROBERT T. BROWN, formerly manager of technical service at the Goodyear Canadian plant has been appointed development manager for the new British Goodyear factory at Wolverhampton, England.

H. N. WHITFORD, manager of the crude rubber department of the Rubber Association of America, who is now investigating rubber plantation conditions in the Middle East for his organization, is having a pleasant and successful trip, according to latest correspondence from him. He was in Sumatra when last heard from and is not expected to return to the United States before February or March. He has already been over six months in the field.

M. O. KOLBE, of the Firestone Tire and Rubber Company, Akron, led the list of employees who received cash awards for the most valuable suggestions adopted by the company. Mr. Kolbe made a suggestion for an important improvement to equipment in the curing room of the plant.

P. H. GOODALL, assistant sales manager of the Mohawk Rubber Company, made an extensive field trip through the South about the middle of November. Mr. Goodall talked with Mohawk dealers in Dallas, Austin, San Antonio, Houston, Shreveport, La., New Orleans and Atlanta, and reports that sales prospects in the South are the best in the history of his company.

TEN MORE PAGES

NEWS OF THE RUBBER INDUSTRY

Beginning on Page 253

Trucking Sheet Rubber to Mills

Moving Pigments by Hand

Transporting Raw Batch Stock

Internal Transportation As An Aid *to* Production

Notable Economies in Moving Materials and Goods Have Been Effected in Goodyear's Akron Plants—Working on Piece-Work Basis Gives Employees Constant Incentive for Efficient Service

By C. C. STUBER,
MANAGER OF INDUSTRIAL TRANSPORTATION
Goodyear Tire & Rubber Co.

INDUSTRIAL inter and intra transportation, as applied to the Goodyear Tire and Rubber Company, means the one best way of transporting materials in the shortest possible time and with the least expenditure of money and energy so that such transportation will figure as little as possible in the final cost of the finished goods. A careful study of the subject has enabled us to effect notable economies in transporting materials in the factory. The purpose of this article is to explain the principles of industrial transportation and to make clear how we have applied them.

Although classified as a non-producing department, internal transportation is essential to production. The consumer may not be interested in how the materials used in a product were moved in the factory, but such moving was, nevertheless, necessary. Proper internal transportation goes farther than helping to get the product manufactured, for if efficiently done, it contributes to its quality and appearance and the reasonableness of its price.

As a result of our study of internal transportation and our investigation of the amount of lost time and waste motion of the truckers, as well as the confusion of transportation deliveries between the various departments, a centralized control of personnel and equipment was established. For the purpose of administration and accounting, the functions of our transportation organization are segregated into the following divisions:

(a) Transportation of raw material from cars to ware-rooms; supplying the stock-preparing departments with raw material from ware-rooms.
(b) Transportation of all prepared stock to their respective cushions ahead of assembling departments.
(c) Transportation of articles while in the process of being manufactured; manufactured articles to finished product store-rooms.
(d) Transportation of finished articles from finished product store-rooms to shipping departments.
(e) Transportation of material by industrial electric trucks.
(f) Industrial electric truck battery charging plant.

Each division is in charge of a foreman and each is divided into as many sub-divisions as are necessary to render efficient service. Each sub-division has a supervisor in charge. *All transportation supplier's wage earnings are computed on a piecework basis.* All piece work operations include the following:

(1) Segregation of material according to quality, size and type and placing it in the proper location on transportation equipment, or in store-rooms.
(2) Facing the marking on the various articles in the same direction so that descriptions will be fully accessible.
(3) Seeing that just the right amount, size and type of material, as requested on order, is loaded.
(4) Handling all raw materials or finished products carefully to prevent damage. For instance, pushing a load of material off a skid, truck or conveyor is never tolerated.

All these items are carefully checked to avoid unnecessary repiling of material as repiling causes an increase in the unit cost of the department to which material is being delivered.

When material is delivered to a department for the use of the department's craftsmen, the supplier distributes his load in such a way that no craftsmen will have to lose time waiting for material or in going any distance. Since the supplier will be paid according to the production of the department to which he is delivering, his incentive is naturally to delay the craftsmen as little as possible.

Efficient distribution of raw materials is so important, both from the standpoint of output and from that of keeping craftsmen contented, that it is not left entirely to the supplier, but is very carefully watched by the transporta-

C. C. STUBER
Author of the Accompanying Article

tion supervision, cooperating with the production departments. Delays cause a loss in production which would not only occasion a loss to the company but would also lead to labor dissatisfaction.

The movement of all material is scheduled and requisitioned by the production control department. Standardization of truck loads, according to number of pieces and weight, is maintained at all times as decreased loads would necessitate additional trips.

Industrial truck equipment throughout the factory is operated under one centralized authority. Without such unity of neutral centralization, each department would maintain its own trucks and they would become only a side issue, their importance not being recognized. While one department would be struggling along with inadequate equipment, due to a sudden increase in production or a break-down in equipment, another department might have a surplus of such service due to a decrease in production or unexpected layoffs. In this way both departments would be operating at a loss. Still other departments would try to obtain more trucks than their quota, so as to have a surplus for a safety margin. Furthermore, with each department maintaining its own trucks, there would be considerable time lost as there would be a duplication of effort through the return of an empty truck after making a delivery.

Controlling Wasted Effort and Friction

A centralized control was established to study and eliminate all waste effort, confusion and friction between departments. All electric power and hand-truck equipment is segregated according to size and type, and a code letter is set up for each segregation. All trucks are numerically numbered and each number is suffixed with the code letter. As depreciation and maintenance on transportation equipment is charged to the production department on the basis of the allocation of truck equipment, inventory of the allocation of truck equipment is set up for each of the various production departments according to their production requirements.

The recognition of engineering service devoted to the development of industrial truck equipment has in the past been neglected. It was common practice for each of the various production departments to maintain, according to their own ideas, distinct types and styles of trucks to perform the operations pertaining to their production. The result was that when a production department was discontinued or certain operations were eliminated in the process of manufacturing certain articles, such equipment became obsolete. The salvaging of this equipment entirely or in part, gave the management the thought to study the needs of the plant's production as a whole and then design a type of truck which would be inter-changeable, at least in part, throughout the factory. A standard type of running gear, or chassis was designed, which could easily be equipped with various types of racks or bodies best suited to the needs of the different departments. If any operation was discontinued, these racks could be removed immediately and at a small cost. The result of our efforts is that instead of the variety of 49 types of one line of trucks we formerly had, we now have four types of truck chassis which answer all the requirements of the original 49 types.

Where material is consumed slowly, we adopt the skid method of transportation. In the installation of skid equipment, a standard height is maintained in order to obtain a flexible service unit, so that the movement can be performed by either hand or electric transveyor. Where it is necessary to move skid loads for a short distance only, we find it entirely satisfactory to equip the skids with casters or wheels to eliminate the necessity of waiting for the arrival of a supplier with a transveyor (lift truck). The craftsmen can then move the skid loads whenever necessary without the loss of time.

Heavy Construction Trucks Needed

We have found that properly selected electric trucks, powerful and compact, are well adapted for certain types of transportation and a fleet of 73 is helping to keep down the cost of transportation. They are, of course, particularly suited for handling extremely heavy loads for comparatively long distance hauls, where they effect a considerable saving over hand transportation. Lubrication and inspection for necessary repairs is closely looked after.

The unloading of 47 freight car loads of raw material daily called for a careful study of suitable transportation routes. From the staggering number of 1,214 transportation routes in the beginning, we have been able to reduce the number to 411. Items for consideration were standard equipment, aisleways, return loads and routing of deliveries in cycles, or one-way traffic.

The larger volume of raw material used in the manufacture of rubber products consists of crude rubber, fabric and pigments, which are received as follows: crude rubber, in bales or boxes; fabric, in rolls, burlaped; pigments, in sacks, barrels or drums; miscellaneous supplies, in boxes. The way in which this material is transported until it is shipped as finished goods is outlined in the following paragraphs.

Crude rubber is received car load lots in bales or boxes averaging 150 pounds or more. Ten bales or boxes are loaded onto a skid at or in the car by a crew of two men who keep three or four skid loads of crude rubber ahead of the electric transveyor units. The skid loads of crude rubber are then transported to storage and stowed according to rubber classification. Wage payment is based on railroad bill of lading carload weight. The application of this method enables us to dispense with a number of weightmasters.

Skid loads of boxed or baled rubber are then transported to the crude rubber preparing departments to be unpacked and cleaned. It is then placed on skids in lots of 2,500 pounds and transported to compounding departments via scale for individual load weight. Each supplier's weight is recorded separately.

Pigments are usually unloaded from cars onto skids. This class of material is generally packed 12½ pounds to a sack and 160 sacks are stowed on a skid. The 50-pound sacks are stowed 40 to a skid. They are transported to the raw material ware-room and then transported to the preparing or compounding department. Wage payment is based on railroad bill of lading carload weight.

Fabric is received in carloads, in rolls, burlaped, each roll weighing an average of 1,500 pounds. Fabric unload-

ing is usually done in crews of four men. One roll of fabric is placed on a two-wheel baggage truck and transported to fabric ware-rooms via the inspection department. Wage payment for suppliers is based on railroad bill of lading. The fabric is then transported by electric truck to calender departments to be rubberized. Wage payment is based on the number of rolls delivered.

Pigments and crude rubber have now reached the preparing or compounding departments on skids. The compounders remove these raw materials from skids just as they need it in assembling lots for the milling departments. These lots or raw batches are assembled in steel containers averaging 125 pounds. The raw batches are then placed on a conveyor which operates to raw batch storage, via scale for weighing each individual raw batch. A crew of three suppliers remove these raw batches from conveyor and place them on skids in lots of eleven each, thence to raw batch storage. Wage earning is based on a fixed rate per thousand pounds passing over the scales.

Skids of raw batch stock are transported from storage to the milling departments by electric power or hand transveyors. Deliveries are made direct to individual mill. The empty skids are then returned to raw batch storage. The supplier's earnings are based on a fixed rate per thousand pounds milled. Such unit of payment gives the supplier an incentive to keep all the milling operators well supplied with raw batch stock.

Handling Raw Batch Stock

Raw batch stock is then milled and placed on trucks in sheet form by the mill operators, averaging three thousand pounds per truck. Loaded truck of milled batch stock is transported to calender departments, via scale for weighing, by electric tractors. These electric truck drivers are paid a fixed rate per one thousand pounds based upon the production of the milling department. The incentive for these drivers is, of course, to keep the milling departments clear of all loaded trucks and to maintain a supply of empty trucks.

Fabric, as aforesaid, has been transported to calender department with the milled rubber. As fabric is now rubberized, it is transported by an electric truck or hand transveyor to the strip or ply cutting machines of the cutting department, paying a fixed rate per roll. Rolls of rubberized fabric are cut into the desired number of strips and are either placed by cutting machine operator in a "book" or in roll form, or directly onto conveyor operating to tire building department. The books will hold a number of ply strips and ten books are placed on an arm truck, while ply rolls are placed on an arm truck which will carry from thirty to forty rolls. They are then transported to tire building departments where the ply books and ply rolls are distributed among the various tire builders. Suppliers are paid a fixed rate per one hundred tires. The incentive for the supplier is, of course, to keep all tire builders well supplied with material inasmuch as their rate is based upon tire production.

Tires which are being built are placed by the tire builders on a conveyor operating to the curing department. Tires are removed from the conveyor by the transportation suppliers and then placed on trucks according to size. They are then transported to heater for curing operators to remove from trucks and place in heaters. Suppliers return to conveyor with empty trucks. Supplier's earnings are based on a fixed rate per one hundred tires cured. It is, of course, to their benefit to keep the curing operators well supplied with tires.

Tires being cured are removed from heater by operator and placed on conveyor operating to tearing down department. After rims and airbags have been removed from tires, tires are placed on a conveyor operating to finished stock ware-rooms via final inspection department. Tires are removed from conveyor by transportation suppliers and stocked, according to size, in their proper places. Suppliers earnings are based on a fixed rate per one hundred tires.

A carload slip is made up for the withdrawal of material out of stock for shipping. Carloading crew consists of one car dispatcher and three transportation suppliers. By our present method we have been able to reduce our carloading time from six to eight hours per car to two to three hours.

The car dispatcher gives the original loadslip to the transportation supplier who secures the proper equipment to transport material as called for on loadslip and proceeds to stock-room where material is kept. Supplier fills order as called for on loadslip. After loading truck, supplier affixes his surname in full on loadslip as "checker," and retains loadslip. Transportation supplier then transports material to car.

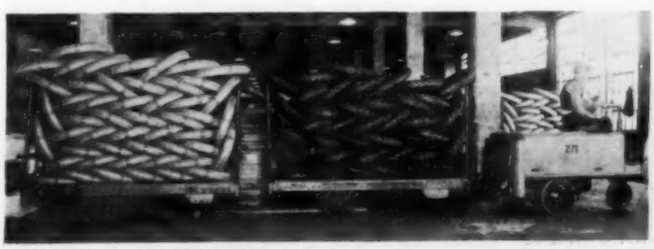
The following illustrates the saving which has been effected on a cycle route at Goodyear Factory No. 2, where layout is well planned.

FORMER METHOD—HAND TRANSPORTATION

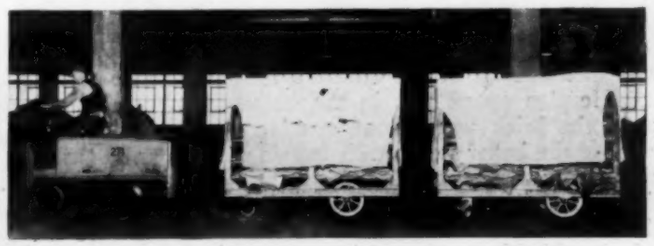
	Number of Men
Delivery of crude rubber from storage to compounding department, then returning empty	9
Delivery of new batches from scales in compounding department to new batch storage and returning empty	12
Delivery of raw batches from storage to raw batch storage ahead of mill. Return with skid loads of milled stocks from mills to compounding department	24
Delivery of raw batches from storage to mill lines	9
Delivery of soapstone, pigments from storage to compounding department	1
Total number of men employed	55

PRESENT METHOD—ELECTRIC TRANSPORTATION

Delivery of crude rubber from storage to the various lines in compounding department, thence delivery of raw batches from scale in compounding department to raw batch storage. Thence, delivery of raw batches from storage to mixing mills. Return of empty boxes, skids and skid loads and skids of milled rubber to storage—Number of men	24
Number of electric trucks	8
Total cost for hand transportation (275 days)	$108,900.00
Total cost for electric transportation (275 days)	63,360.00
Saving for 275 days	$45,540.00



Tractor Train of Tires for Shipping



Tractor Train of Milled Stock

Schaphorst's CHATS *with the* ENGINEER

By W. F. SCHAPHORST, M.E.

LET us suppose that you buy a vulcanizing or other machine and find it unsatisfactory. It does not answer your purpose. You therefore notify the one from whom you bought the machine to take it away. The question is: Have you the right to continue to use the machine after you have rejected it?

The possibility of legal entanglement to a buyer of machinery or any other equipment under such conditions should prompt him to carefully read the sales contract. Contracts are usually so worded that anyone of ordinary intelligence can fully comprehend their meaning. As an illustration, here is a case that happened in one of the western states:

A bought a piece of machinery from *B*. The contract allowed him to give it a tryout for a certain length of time to enable him to determine whether or not it would answer his purpose. At the expiration of this period if it did or did not meet the requirements he was to notify *B* in writing.

He gave the machine a trial and decided that it would not do. He notified *B* but continued using the machine. Presently *B* called on him to pay for the machine but *A* declined, saying that his notice as per contract that the machine would not answer his purpose released him from the contract and that he was not under any further obligation to pay.

B brought suit for collection. The courts held that *A*'s continued use of the machine had rendered void the rejection clause in the contract and constituted his acceptance.

In the light of these facts it is obvious that where a purchase is made with the right to reject after a trial, the buyer should be cautious in the use of such machinery after rejection. You may have no right to use it.

It is also obvious that in such a situation if the buyer should for any reason desire to use the machine after rejection, he should get permission to do so from the seller, under another contract. Or, he should be careful to have such permission written into the original contract before signing.

Even though the machine is unsatisfactory to a buyer its temporary use after rejection is often absolutely necessary.

Cheap Coal is Most Expensive

IN a recent discussion before the American Society of Mechanical Engineers a prominent engineer cited an example where the cheapest coal was the most expensive. He stated that many kinds of anthracite and bituminous coal have been tested in his plant. In the tests it was found that with bituminous coal the efficiency was 85 per cent, whereas with anthracite it was somewhere between 75 and 80 per cent. It was necessary to pulverize the anthracite very fine because of the difficulty in igniting and burning it. He also stated that in the construction of a certain plant the brick work alone cost as much as the boiler, because the boiler was set 35 feet in the air. The anthracite would not operate the boilers at low capacity because the burners insisted on going out. However, they found that they can burn any grade of anthracite provided they mix it with 30 per cent of bituminous.

Less Rubber and Cotton Now Used in the Average Casing

IN spite of the fact that a steadily increasing percentage of the tires made in the United States are of the balloon type in which more rubber is supposed to be used, the consumption of crude rubber in the average tire in 1927 is less than in 1923. In the latter year, according to figures of the Rubber Association of America, an average of 8.66 pounds of rubber was used in American tires; during the first nine months of 1927, statistics from the same organization show, the average ran only 8.50 pounds.

In the early part of 1924 balloon casings represented about 6 per cent of the tire industry's output while today 55 per cent of the production is of the balloon type. As the construction of this type is generally known to call for more rubber and less fabric, the explanation of the decline in the average crude rubber content must lie in the increased use of reclaimed rubber. Comparative figures are as follows:

Year	Crude Rubber Consumed in Casings	Pneumatic Casing Production	Average Per Unit
1927*	430,744,600	50,662,930	8.50
1926	510,861,120	61,472,268	8.31
1925	520,369,920	60,844,445	8.55
1924	443,880,640	51,633,590	8.59
1923	392,056,000	45,258,581	8.66
Average	459,782,450	53,974,362	8.52

*Nine months only.

Inner tubes have not followed the same trend shown by casings. Instead, the rubber content of inner tubes has increased a trifle, from an average of 1.7 pounds per tube in 1923 to 1.8 pounds in 1927.

While the advent of the balloon tire has not brought about the expected increase in the average crude rubber consumption per tire, the anticipated drop in fabric consumption has resulted. A comparison of the first nine months of 1927 with the previous four years shows a steady decline amounting to half a pound in all, the average tire produced this year consuming only 3.22 pounds of fabric as compared with 3.68 pounds in 1925 and 3.67 pounds in 1924.

This decline is partly due to the declining demand for fabric casings, the construction of which calls for a greater weight of fabric per unit than either the high-pressure cord or balloon type. The fabric casing production so far this year is between 1 and 2 per cent of the total whereas in 1924 close to 30 per cent of the total was in this type and in 1921 more than 70 per cent were fabrics. Furthermore, the average balloon casing contains less fabric per unit than either of the old high-pressure types and were it not for the high-pressure replacements the average tire now produced call for less than 3.22 pounds of fabric. It seems inevitable that the scrapping of old model cars will bring a further reduction in the average fabric consumption per tire. Comparative figures follow:

Year	Cotton Fabric Consumption	Pneumatic Casing Production	Average Per Unit
1927*	122,421,606 pounds	37,997,200 casings	3.22
1926	165,963,182 "	46,104,201 "	3.59
1925	168,295,927 "	45,633,334 "	3.68
1924	142,415,356 "	38,725,193 "	3.67

*Nine months only. All figures shown in this table represent only 75 per cent of the industry.

Hevea Planting in Cuba Doubtful

Dr. W. L. Schurz, who was appointed some time ago by President Machado of Cuba, to study the possibilities of growing Hevea on a commercial scale in the island, has reported, according to *The India Rubber Journal*, that after studying all parts of Cuba and carrying on experiments at the agricultural station at Santiago de las Vegas, he has come to the conclusion that Hevea would have very little chance of thriving in Cuba and that rubber production on a large and paying scale is practically impossible.

*Progress Report of the Physical Testing Committee of the Rubber Division, A. C. S.**

Importance of Temperature and Humidity Control in Rubber Testing

Conditioning of Test Samples Under Definite Controlled Temperature and Humidity Is Recommended by Committee as Means of Obviating Erroneous Results Which Uncontrolled Tests May Give

ABSTRACT

THE purpose of the work which this committee has undertaken is to determine the effect of the variables which influence the results of physical tests on rubber. The investigation has proven that variations in temperature which may occur from day to day in an uncontrolled testing room may affect the physical tests to as great a degree as a 25 to 40 per cent change in the time of cure, while relative humidity affects the results to only a minor degree. Furthermore, variations in the absolute humidity of the room in which the unvulcanized rubber is stored between the time of mixing and the time of curing may affect the tensile strength and modulus of rubber compounds to as great a degree as does the temperature after curing.

It is, therefore, apparent that laboratory tests which are conducted under uncontrolled conditions of temperature and humidity may give highly erroneous results and may even give misinformation which is worse than no information at all. The committee, therefore, recommends that mixed stock prior to curing and cured stock prior to testing be conditioned for not less than twenty-four nor more than twenty-eight hours at 82 deg. F. ± 2 deg. and 45 per cent relative humidity ± 3 per cent and that the testing room be maintained at 82 deg. F. ± 2 deg. If a temperature of 82 deg. F. cannot be maintained for conditioning the mixed stock prior to curing, the committee recommends a relative humidity corresponding to the temperature used which gives an absolute humidity equal to that obtained under the former conditions. The temperature of the testing room should be controlled within the above stated limits, but it is not necessary to control the humidity of the entire room. A small conditioning cabinet in which the standard humidity is maintained has been found to be sufficient.

RECOMMENDATION

The undersigned committee recommends that—

1. Mixed stock prior to curing be conditioned for not less than twenty-four nor more than twenty-eight hours at an absolute humidity of 5.24 grains of water per cubic foot of dry air and cured stock prior to testing be conditioned for not less than twenty-four hours at 82°F±2° and 45% relative humidity ±3%.
2. The testing room to maintained at 82°F±2°.
3. The time, between removing samples from the conditioning cabinets and curing or testing, be not more than 2 hours.

The temperature of the whole testing room should be controlled closely. It is not necessary, however, to control the humidity of the entire room. Cabinets, located in the room, humidified with the proper saturated salt solution or sulphuric acid solution will produce the recommended conditions.

An agreement has been made with the Committee on Physical Tests of Rubber Products of the A. S. T. M., known as Sub-Committee No. 10 of Committee D-11, whereby the A. C. S. Physical Testing Committee will recommend testing conditions to be accepted as standard by the A. S. T. M. when their use becomes general enough to warrant their adoption.

Your Committee therefore recommends that all laboratories equip to control both temperature and relative humidity as suggested above and report to Sub-Committee No. 10 of the A. S. T. M. to enable them to decide when these test conditions have become sufficiently widely used to warrant their adoption as standard procedure. Though any standard procedure adopted by the A. S. T. M. will apply only to the ageing period between curing and testing, it is recommended that those who are not able to equip to control these two factors should record both temperature and relative humidity during both ageing periods—i. e. between mixing and curing and between curing and testing so that they will later be able to prove to themselves the importance of controlling both temperature and humidity for both periods in connection with all laboratory work, especially for that which is to be published.

GENERAL

The purpose of this Committee is to determine the effect of variables in atmospheric conditions on the physical properties of rubber so that we may know the relative importance of controlling these factors. It is not intended that this work shall include the relative value of specific tests for given purposes or become a research directed towards the development of new tests. It is the specific intent to limit this work to the refinement of tests widely used and considered as routine and standard and not to develop into broader lines of research.

The work has been carried out since the first of the year in conjunction with the Bureau of Standards at Washington by F. E. Rupert as a research associate under the direction of the Committee. The Bureau of Standards has contributed its facilities, and the companies represented by the members of the Committee have defrayed the expenses incurred, contributing $650.00 each. These contributions have carried work thus far and will allow the work to continue until the first of the year. The Rubber Association and the Firestone Tire and Rubber Company (proportion based on rubber consumption) have agreed to support the work of the Committee for 1928 to the extent of $6,000.

It was evident that although considerable work had been done by Stringfield and others on the variations in physical properties of vulcanized rubber caused by variations in temperature and relative humidity during the several stages of preparing and testing samples of rubber, nevertheless the work should be greatly extended. The Committee agreed that a study should be made of the effect of temperature and relative humidity of the air on rubber before milling, during storage before curing, and storing before testing, with respect to the stress-strain, tensile, and abrasive properties of the compounds. It was decided that the stress-strain and tensile prop-

* A report giving results in detail will be prepared and distributed to members of the Rubber Division of the American Chemical Society at a price to cover cost of publication.

erties be studied first pending the development of a more satisfactory abrasion test.

Keeping before us the real purpose of the investigation—the importance of controlling temperature and relative humidity during the preparation of test specimens in a commercial laboratory—the following compounds were chosen for this work. Their suitability for this investigation may be open to criticism and argument. They are, however, representative of type formulae in use today.

	Test Formulae				
	No. 1	No. 2	No. 3	No. 4	No. 5
Smoked Sheets	100	100	100	100	100
Zinc Oxide	5	5	5	5	5
Sulphur	3	3	3	3.5	3.5
Carbon Black	..	..	..	40	40
Di-ortho-tolyl-guanidine	0.75	0.75	..	1.25	..
Mercapto-benzo-thiazole	..	..	0.5	..	1.0
Stearic Acid	..	..	0.5	..	3.0
Mineral Rubber	..	5.	5.	5.	..
Pine Tar	..	..	..	2.	2.

These formulae represent a laboratory test compound, two gum tire carcass stocks and two high grade tread compounds. With this variety of compounds, we are able to study the effect of temperature and relative humidity upon gum and compounded types, the difference of the effects on two widely different types of accelerators, and the difference in effect produced by varying amounts of common softeners.

Effect of Temperature and Relative Humidity Subsequent to Vulcanization But Prior to Testing

The effect of temperature and relative humidity on cured stocks before testing and during testing was first investigated. Sufficient quantities of compounding ingredients and washed, dried, and blended smoked sheet from three lots were set aside to carry out the investigation of the effect of temperature and relative humidity both before and after curing. A 75-pound batch of each of the stocks was mixed on a 60″ mill and sheeted gauge and width on a factory calender. After a rest of 24 hours the curing was carried out continuously in two pot presses and was completed within 36 hours, eliminating variation due to ageing in the uncured state.

The Guanidine compounds were cured at 287°F (142°C), while the Mercapto-benzo-thiazole compounds were cured at 258°F (126°C). Each stock was given five cures ranging from an under to an over cure. The five cures of each of the five stocks were conditioned at each of six relative humidities, 0, 20, 40, 60, 80 and 100%, and at each of five temperatures, 5, 15, 25, 35, and 45°C. Thus thirty sets of conditions were studied on each of five cures of five stocks, making a total of 750 tests. The mixing and curing was done in a factory and the cured slabs were shipped to Washington where the rest of the investigation was carried out at the Bureau of Standards.

The cured slabs were exposed to air at the various relative humidities in conditioning boxes located in a constant temperature testing room.

The temperature of the room in which both the conditioning and the testing were carried out was maintained at each of the five temperatures until all tests at each temperature were completed.

Forty-eight hours was chosen as the period between curing and testing for subjecting the slabs to the test temperature and relative humidity. However, a determination of the rate of absorption of moisture at 100% relative humidity showed that all five stocks absorbed moisture at a fairly rapid rate for six days after which absorption was much lower. Sufficient additional tests with six days exposure were therefore made to determine the effect of this longer period.

Stress-strain curves and tensiles were obtained with the latest autographic Scott testing machine loaned to the Committee by the Henry L. Scott Company and set up in the constant temperature room so that the specimens were tested at the same atmospheric temperature at which they were conditioned.

CONCLUSIONS

While the individual results show undesirable variations which cannot be explained, especially with respect to tensiles, nevertheless a sufficient number of tests were run to make their averages significant of general effects and permit the following generalizations to be made for these compounds:

The effect of temperature is approximately three times as great as the effect of relative humidity changes within the range of each studied in this series of tests. Specimens are highly sensitive to change in temperature, making it absolutely necessary to test them at a uniform temperature and to control the temperature in the testing room within narrow limits. An increase of 18°F is sufficient to cause a decrease in tensile and modulus corresponding to a 25% to 40% decrease in time of cure.

Although the stress-strain and tensile properties of cured rubber are affected by variations in relative humidity, the effect is more gradual and the specimens are not so highly sensitive to relative humidity changes. It will therefore be unnecessary to control the relative humidity in the testing room but will be sufficient to store the cured slabs in a conditioning chamber. A limiting range of ±3% relative humidity is considered necessary for accurate work. An increase of 20 points in relative humidity is equivalent to a decrease in time of cure of 3% to 5%.

Increasing relative humidity and increasing temperature, individually or together, reduces the modulus and tensile of all the stocks.

While there is a slightly increased effect due to continued absorption of moisture for the six days' exposure, the difference in results between two and six days is too small to warrant longer than two days' conditioning of test pieces. At the higher temperature, the six day exposures gave irregular results, no doubt due to ageing effects.

The physical properties of the gum stocks are affected more than the carbon black stocks by changes in relative humidity.

State of cure has very little influence upon the effect of differences in relative humidity.

The Guanidine and Mercapto-benzo-thiazole stocks showed very little difference in degree of sensitivity to changes in relative humidity.

The softeners exerted only a negligible effect upon the results.

Effect of Temperature and Relative Humidity Subsequent to Mixing But Prior to Vulcanization

The same five compounds were used as in the first part of the work but the range of relative humidities was shortened to 10, 40, 70 and 100% and the number of temperatures investigated was also reduced from five to three, 15, 25 and 35°C, and three periods of vulcanization were used instead of five. These ranges covered the field sufficiently and reduced the amount of work so that the available equipment at the Bureau of Standards could be used and still obtain significant results.

The mixing for this work was done at the Bureau of Standards on a 24″ mill and the stock was sheeted to desired gauge ±.003″ immediately after mixing but at reduced mill speed. Because of the smaller number of temperature and humidity conditions investigated, it was possible to mix all of each stock required in one batch.

The conditioning was carried out in wooden cabinets which were coated inside with paraffin to insure tightness. The doors were also sealed with paraffin. These conditioning cabinets were in a constant temperature room held at 15°C, one being kept at this temperature and the other two maintained at 25 and 35°C respectively by auxiliary heating units in the cabinets. Each cabinet contained four compartments maintained at 10, 40, 70 and 100% relative humidity by sulphuric acid of the proper concentration. Temperature checks in the cabinets were made at top and bottom and held within 1°C. The relative humidity was checked with wet and dry bulb thermometers and maintained within a range of ±3%.

From preliminary experiments it was evident that uncured compounds exposed to 100% relative humidity continued to absorb moisture for some time, so that in addition to a two-day exposure used for most of the work as covering laboratory practice, some tests were run after 12-day exposure, to approximate the maximum effect.

After exposure, all surface moisture was removed and the samples were immediately cured in a four-platen press. Four-cavity aluminum frames were used for molds. The cavities were 6″ square and .070″ thick, giving six test specimens which were broken in every case. The slabs did not vary more than .002″ in thickness from edge to edge. Twelve slabs from three conditioning temperatures and four relative humidities were cured simultaneously.

This method of handling the work eliminated many possible

variables since the slabs for all exposures were obtained from the same batch and all samples for each time of vulcanization were cured at once. The temperatures of platens were tested with mercury thermometers and thermo-couples in the molds and the greatest variation found was 0.3°C. By properly arranging the sequence of operations all cured slabs were allowed to stand for about one month before testing. The test pieces were cut lengthwise of the grain of the sheets.

All vulcanized test specimens were conditioned for two days at 80% relative humidity and 25°C. The testing was done as previously on the latest type Scott testing machine.

CONCLUSIONS

The effect of relative humidity on uncured stocks is very much more marked than the effect of temperature. The importance of these two variables is therefore reversed from their importance in regard to exposure between curing and testing. In the latter case the temperature of the testing room should be controlled accurately while the effect of relative humidity is comparatively small. During the period between mixing and curing, however, the relative humidity should be controlled closely and the effect of temperature is not so important.

The difference in effect between two- and twelve-day exposures is so slight that all further discussion will be based on results obtained after two days' exposures.

The effect of varying relative humidity and temperature between *curing and testing* was in the same direction for all five formulae. The effect of relative humidity between *mixing and curing* is reversed in direction by some of the compounds. Generalizations cannot, therefore, be drawn for this series of tests. It is readily seen, however, that it is of utmost importance to control relative humidity at this point of preparing test specimens and the data indicate that it may be just as important in some cases to examine the effect of a range of relative humidities on a compound as to run a range of cure.

Generally speaking, the undercures are affected more by changes in relative humidity during conditioning before cure than the correct and overcures.

It is also generally true that the effect is more pronounced at the higher temperatures, but this is due chiefly to the great increase in absolute humidity rather than the increase in temperature.

Formulae No. 1 and No. 2, D. O. T. G. accelerated gum stocks with and without Mineral Rubber, show a distinct lowering of the modulus and tensile strength with increased humidity. Formula No. 4, a D. O. T. G. accelerated carbon black tread stock, is only very slightly affected by differences in relative humidity, but what change there is, is in the same direction as for formulae No. 1 and No. 2. Formulae No. 3 and No. 5, both Mercapto-benzo-thiazole accelerated (No. 3 a gum stock and No. 5 a carbon black tread stock), show very marked increases in moduli and some increase in tensile strength with increased relative humidity. In some cases the effect is so great that a change in the per cent figure of the relative humidity of 20 points is equivalent to ±20% change in time of cure, depending upon the type of stock. In other words, the total discrepancy between a Mercapto-benzo-thiazole gum stock and a D. O. T. G. gum stock might be equivalent to 40% difference in time of cure when the relative humidity changed 20 points. This is adequate reason why different laboratories have not been able to check results at different times during the year, or even from week to week or day to day.

On the other hand, temperature before curing does not exert such a pronounced effect on the test results, although a change of 18°F makes a difference equivalent to a change in time of cure of 15%. This effect is due chiefly to the increase in absolute humidity and not to the change in temperature.

Effect of Time of Exposure and Effect of Delays Between Removal of Uncured Specimens from Conditioning Cabinets and Curing

The differences in effect between two-day and twelve-day exposure before curing and the differences between two-day and six-day exposure before testing were both so slight that it was decided to repeat sufficient of the work to check the possibility of reducing the exposure periods to 24 hours. This was very desirable as most laboratories operate on 24 hour rest periods.

Formulae No. 2, No. 3 and No. 5 were used and the same procedure followed as described in the previous phase of the work.

One group of uncured specimens was conditioned for 24 and 48 hours at 82°F and 55% relative humidity and cured immediately. Samples were tested at 82°F after 48 hours exposure at 82°F and 55% relative humidity. This work was to determine the possibility of reducing the time of conditioning from 48 to 24 hours.

Another group of uncured samples was conditioned for 24 and 48 hours at 82°F and 55% relative humidity and after removal from first conditioning cabinet, duplicates were in each case exposed for ½, 1, 2 and 6 hours at each of the relative humidities 10%, 55% and 100% at 82°F. The samples were then cured. The specimens were tested after 48 hours exposure at 82°F and 55% relative humidity. This work was to determine the effect of delays between removal of uncured compounds from the conditioning cabinet and curing.

Duplicate cured samples were exposed before testing for 24 hours and 48 hours at 82°F and 55% relative humidity to determine the possibility of reducing the time of exposure from 48 to 24 hours.

When this work was started, the Committee had tentatively decided to recommend 55% relative humidity as representing average relative humidity throughout the country.

CONCLUSIONS

There is but slight difference in results between 24 and 48 hour exposure of uncured stock at 82°F and 55% relative humidity. Twenty-four to 28 hours exposure will give accurate results.

Uncured specimens conditioned at 82°F and 55% relative humidity show negligible differences in results when reconditioned for up to six hours at 10% or 100% relative humidity at 82°F between removal from original conditioning cabinet and curing. Uncured specimens may be allowed to stand exposed to room conditions for periods of time up to two hours before curing for accurate work.

Cured specimens conditioned at 82°F and 55% relative humidity for 24 and 48 hours before testing show negligible differences in tensile and stress-strain properties. Twenty-four hours is sufficient time for conditioning cured test specimens.

DISCUSSION

A report covering the first phase of the work on the effect of atmospheric conditions between curing and testing was read at the Richmond Chemical Society meeting last April and has since been published in the *India Rubber World* (1927) *76,* 139 and *India Rubber Review* (1927) June, 40.

In that report the Committee recommended that the physical testing room be maintained at 25°C (78°F) and that the conditioning cabinets be kept at 80% relative humidity ±5%. Since that time, the members of the Committee have found that 78°F is too low a temperature to maintain in the summer without refrigeration, which, because of expense, should certainly be avoided. 82°F has been found to be a practical temperature which can be maintained ±2° the year around with the possible exception of a very few days in the summer. While this temperature is not as comfortable for workmen as lower temperatures, some laboratories have kept their testing rooms at 85°F and find that the workers soon become accustomed to this temperature.

Eighty per cent relative humidity was recommended at a time when it was thought it might be necessary to condition an entire room and this high humidity was chosen because it is much more economical to raise than to lower the relative humidity of outside air. The present recommendation requires comparatively small cabinets only to be humidified. Forty-five per cent relative humidity at 82°F was chosen because the absolute humidity of 5.24 grains water per cubic foot of dry air is the same as the present A. S. T. M. standard fabric testing conditions of 65% relative humidity at 70°F. This will allow the use of 70°F and 65% relative humidity for conditioning uncured stock and fabric samples if desired. Since temperature alone has a negligible effect on uncured stock, the absolute humidity is specified and any convenient temperature may be used. This allows the uncured stock to be conditioned in a cabinet located in the mixing or curing room and maintained at a constant temperature

higher than the room and with relative humidity equivalent to the recommended absolute humidity.

Although sulphuric acid solutions were used to obtain the desired humidities in all the work carried out thus far, the Committee recommends that saturated salt solutions be used because small variations in specific gravity cause considerable differences in the vapor tensions of sulphuric acid solutions.

At present, we have found no data concerning salts or combinations of salts whose saturated solutions will give the absolute humidity (5.24 grains water per cubic foot air) equal to 45% relative humidity at 82°F in the range of temperatures which will be employed. The following table gives the relative humidity to be used at various temperatures with the available salt solution data. The desired relative humidities are those equivalent to an absolute humidity of 5.24 grains of water per cu. ft. of dry air. The method of calculation described by Spencer (Int. Crit. Tables, Vol. I, p. 67) is used. The percent humidity is arrived at by dividing the aqueous tension (P_1) of the saturated salt solution by the vapor pressure (P_2) of pure water at the same temperature. Data for P_2 are from Landolt-Börnstein, Ed. 5, p. 1317.

Desired		Data for Nearest Salt					Source
Temp. °F	R.H. %	Salt	Temp. °F	R.H.= P_1/P_2 %	P_1 mm.	P_2 mm.	
60	90.5	Rochelle salt*	60	87.9	11.6	13.2	Lowry & Morgan, J.A.C.S.
60	90.5	Na tartrate	60	91.6	12.1	13.2	*46*, 2192 ff.
65	76.5	Na Cl	65	77.0	12.14	15.77	Speranski, Z. Phys. Chem. *70*, 526.
70	65.0	NH_4NO_3	70	63.2	11.86	18.76	Edgar & Swan, J.A.C.S. *44*, 570.
70	65.0	$CoCl_2$—$6H_2O$	70	68.2	12.8	18.76	Derby & Ingve, J.A.C.S. *38*, 1439.
75	56.0	$Mg(NO_3)_2 6H_2O$	76	52	..	..	Obermiller, Z. Phys. Chem. *109*, 145.
75	56.0	NaBr—$2H_2O$	68	58	..	..	
80	48.0	$Ca(NO_3)_2$—$4H_2O$	80	49	..	..	do
82	45.0	do	82	48	..	..	do
85	41.0	NH_4NO_3	85	42	13.0	30.75	Landolt Börnstein
90	35.0	$MgCl_2$ $6H_2O$	90	33.5	12.1	36.07	do

*Which has not been heated above 104°F.

It is plain that more salts or combinations of salts whose saturated solutions will give the desired relative humidities at the higher temperatures will have to be found before saturated salt solutions can be used. Until proper salt solutions are found, sulphuric acid solutions of proper concentrations can be used if adequate specific gravity control is maintained. Wet and dry bulb readings should be taken when determining the proper concentration of acid since the size of the conditioning cabinet may have an effect.

Data on sulphuric acid solutions for humidity control are found in an article by R. E. Wilson in *J. I. E. C. 13*, 326 (1921) under heading of "Humidity Control by Means of Sulphuric Acid Solutions with Critical Compilation of Vapor Pressure Data."

Water absorption data show that both uncured and cured stocks continue to absorb moisture for several days but all of the work thus far shows negligible differences in tensile and stress-strain properties after 24 hours conditioning. The first two phases of the present problem were carried out with 48 hour and longer conditioning periods, but the later work showed substantially no difference between 24 and 48 hour conditioning periods, hence the recommendation to condition for not less than 24 hours.

FUTURE WORK

Sufficient tests will now be made to determine the importance of effect of changes in relative humidity and temperature before milling.

For the next major problem the Committee has decided to investigate the effect of relative humidity and temperature on resistance to abrasion when stocks are exposed both between mixing and curing and between curing and testing. This work will not be concerned with the correlation of abrasion tests and service but will be carried out on two different types of machines where tests are readily duplicable.

THE COMMITTEE

E. R. BRIDGWATER	E. I. Du Pont de Nemours & Co.
D. F. CRANOR	Binney & Smith Co.
E. B. CURTIS	The United States Rubber Co.
J. W. SCHADE	The B. F. Goodrich Co.
N. A. SHEPARD	The Firestone Tire & Rubber Co.
A. A. SOMERVILLE	R. T. Vanderbilt Co.
W. W. VOGT	The Goodyear Tire & Rubber Co.
P. L. WORMELEY	Bureau of Standards
J. E. PARTENHEIMER	The Fisk Rubber Co., *Chairman*

FORESEES AN ALL-RUBBER TIRE

THE interesting possibility that the use of fabric in automobile tires may eventually be eliminated as a result of individual wheel springing for motor cars is suggested by Dr. Philip Schidrowitz in one of his recent contributions to the *India Rubber Journal* of London. After expressing his opinion that the solid tire is removed by its weight, if nothing else, from consideration as the tire of the future, Dr. Schidrowitz continues:

"We ride essentially on air and on rubber. The air cushion, however, has to be enclosed in some solid material, so we choose the most resilient of known solids, namely rubber. But rubber not being sufficiently rigid, we reenforce it with a fibre, namely cotton, in the form of cord. Now cotton is expensive, and the preparation of proofed cord and the construction of a cord tire with tread, etc., are relatively expensive operations. Then in addition we have the inner tube.

"Cannot we then make the rubber as such so rigid that we can afford to do without the cotton? Certainly we can, with the aid of modern compounding ingredients, produce a rubber which is so stiff that as regards rigidity the obstacles in this connection can be overcome, and the 'all-rubber' tire, I believe, has already gone beyond the laboratory stage . . .

"The accounts which have appeared in the press of the latest idea of spring motor cars suggest to my mind that we are within sight of a fundamental change, and that this change may affect not only the design of the car, but of tires as well . . .

"Instead of the present method of spring the wheels of a car, under the new method each wheel is individually sprung, with the result that any obstacle encountered, such as a pot-hole, is, so to speak, a local matter, affecting only the particular wheel which is at grips with the difficulty, and not, as at present, the whole chassis.

"We can conceive, therefore, of the new springing device leading to an all-rubber tire, with or without an inner tube, or even possibly, with an inner tube chamber filled with a porous or cellular material—say sponge-rubber."

10 YEARS AGO

Items Reprinted from November 10, 1917, issue of THE RUBBER AGE

C. B. Raymond, vice-president of B. F. Goodrich Co., has been notified of his appointment to the committee which the Rubber Association of America has formed to cooperate with the government in war matters. Other Akron men on the committee are: P. W. Litchfield, factory manager of the Goodyear Tire & Rubber Company, and H. S. Firestone, president of the Firestone Tire & Rubber Co.

* * *

Another serious labor drain on Akron rubber companies was begun a few days ago when the first recruits of the new mechanical unit being raised here were accepted into service. Expert tire repair men, machinists and others who can keep Uncle Sam's army in fighting trim are being asked to join the colors.

* * *

With a capital stock of $250,000 the New England Tire Fabric Company, of Worcester, Mass., has been incorporated to manufacture tire fabrics. The officers of the company are Joseph W. Hawks, president and William W. Lombard, treasurer.

* * *

Carbon Black was quoted at 24 cents per pound.

THE GENTLEMAN FROM MINCING LANE
reports current opinion in London's famous rubber market in every issue of THE RUBBER AGE

The LONDON LETTER

The Gentleman Talks About a Happy New Year

LONDON, 29th November, 1927.

I AM only one man," a New York poet has written. From this beginning either humility or pride of accomplishment might be developed. Ofttimes one man has been the making or the breaking of a great scheme.

Sir Hugh Clifford has recently been appointed Governor-General of the Straits Settlements and High Commissioner of Malaya. Is he to be the "one man" who will make the Stevenson Scheme work in Malaya? London had thought the previous Governor at Singapore to be lukewarm as regards rubber restriction. There can be no doubt about Sir Hugh's attitude on this subject. The recent improvement in the position of rubber in London is partly due to the reports of his vigorous action in putting down smuggling, with the cooperation of the Sultan of Johore, and his stimulation of the downward revision of standard production of the individual estates. The impression here is that new heart has been put into the rubber restriction administration in Malaya—the pivotal area in the Stevenson Scheme.

Who is Sir Hugh Clifford, G.B.E., G.C.M.G., K.C.M.G., C.M.G.? His record, occupying a whole column in *Who's Who,* shows plainly that he is one of that class of British Colonial administrators which has done so much to establish the high-standing of British administration in various parts of the world. What is decidedly to the point in connection with our interest in him at the moment is that he is a man of action. He took a leading part in suppressing the Pahang Rebellion; he led armed expeditions into the Native States of Trengganu and Kelatan. As Governor of North Borneo and Labuan under the Chartered Company, he resigned owing to his disapproval of the company's methods. He has been successively Governor of the Gold Coast and Nigeria and since 1925, Governor of Ceylon. With his past experience in Malaya and his recent knowledge of rubber restriction in Ceylon, he certainly is in a position to tighten up rubber restriction in Malaya, if any man can.

RUBBER has gone up from in the neighborhood of 16d to over 19d per pound in London during the past four weeks, based largely on American buying, and the hopeful reports coming from Malaya as to the suppression of smuggling and re-assessment of standard production of estates in a downward direction. At first, there were some erroneous reports circulating in London with regard to re-assessments, the impression being given that there would be no change in assessments during the coming fiscal year, and that increases which certain estates might have ordinarily expected on account of new areas coming into bearing, would not be made. However, this erroneous view has now been corrected. Recent figures received for five companies show drastic cuts—in some cases as much as 20 per cent—with the result that there has been some irritation among some of the companies and appeals are being made against these decisions.

While rubber speculators have had rather a discouraging time of it thus far this year, there has been a significant revolution in their sentiments in the last four weeks—the bears have been shedding their skins for bull-hides. Writers and speakers generally are giving voice, with more conviction, to optimistic views of 1928. One careful study of the position includes a reduction of between 40,000 and 50,000 tons in the world's stocks between January and June, 1928.

Shares are always a bit slow in moving upward or downward consistent with the changes in the raw material; hence it is not surprising to find shares are firm and have not moved up much as yet to correspond with the increase in raw rubber prices.

LONDON rubber statisticians frankly admit that they cannot understand American statistics as to rubber stocks, etc. Why should there be this strong movement of American buying just at this time when American stocks seem to be very substantial? A writer in *Truth* tries to explain the position as follows:

> "If American stocks are as much as 97,453 tons, as shown by the October figures, it is assumed that a large part may be held by the pool, who are unwilling to let it out to manufacturers, and the latter not being well supplied are forced to buy on the spot for immediate needs. Another suggestion is that the effect of the 60 per cent restriction is making it difficult to buy in the East, and that buyers have been compelled to come to London for their supplies. American consumption is usually at a low ebb about this time of the year, but January to March is an active period and it is not unlikely that American manufacturers are anticipating their requirements. Some color is given to this view by the return of the Ford motor production to the market, the belief that American trade is on the up grade again after the setback of the past few months, and the evident intention of the authorities to tighten up restriction to the utmost limits of the present scheme."

A leading firm of rubber share-brokers in their market report points to an interesting development which they expect to take place following the suppression of smuggling. Dutch East Indian shipments, which have hitherto included rubber smuggled out of Malaya, they believe should shortly be declined still further. September figures already show this tendency, 16,643 tons for September, 1927, compared with 19,177 tons for the previous month, and an average for the first nine months of the year of 18,378 tons.

There was a substantial decline in London stocks last week and another one is expected in the present week. While this tendency cannot be credited to the recent tightening of restriction, if it continues over a number of weeks with curtailed supplies from Malaya, there will be no doubting that the Scheme is being made effective.

Just as raw rubber prices are beginning to go up the intensified competition among rubber tire manufacturers is bringing tire prices down anywhere from 5 per cent to 15 per cent in the British market.

Yours faithfully,

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EDITORIAL COMMENT

The Rubber Chemists

SIGNS have not been lacking to show how solidly the chemist is established as a vital unit of the rubber industry. As the most recent sign, and incidentally one upon which the chemists are to be heartily congratulated, we may mention the action of the Rubber Association directors in voting a fund of several thousand dollars for the continuance of work which was initiated by the Rubber Division of the American Chemical Society. Better recognition of the part the chemist is playing in the industry's progress could not be asked. It is needless to say that such recognition is richly deserved. The first cooperative research work the Division undertook properly concerned standard conditions under which laboratory tests might be conducted in order that checking and comparison might be trustworthy. No doubt such a business-like idea appealed to the business men who are members of the Association's board of directors.

The ascendancy of the Rubber Division in the American Chemical Society is another positive sign of the recognized place of rubber chemistry. Although the Division is one of the younger parts of the Society, it is also one of the largest and most influential. Each year has seen it adding members and taking a more secure place in the parent organization.

In fact, the Division has grown until it is now ready to embark on the interesting work announced on another page of this issue. This concerns the organization of four local groups of members of the Division so that more frequent meetings may be held and more of the industry's technologists may have an opportunity to take part in the healthy interchange of ideas which after all is the foundation of the Division. The first of these local groups will meet in January and is already extending a wide invitation for junior chemists, laboratory and research assistants, technologists and others to attend the first meeting. For their own benefit and that of the industry, it is hoped that there will be a general acceptance of the invitation. A wide interest in the first of the meetings in each of the local group cities will go far in guaranteeing success for the future. It is a safe prediction that the local meetings will become an enjoyable and valuable part of the activities of a big percentage of the chemists and a good start toward getting them established is highly important.

The Threat of Speculation

THE measures already taken or under way to tighten up the machinery of restriction by reducing estate assessments, eliminating smuggling and limiting the validity of unused export rights, would seem to make it probable that exports during the quarter just commenced will actually be restricted to 60 per cent instead of something like 75 or 80 per cent, which, owing to the offsetting nature of the above factors, has been the actual percentage.

This probability, together with the evidence of a better demand and the belief that 60 per cent will not be sufficient in the long run to satisfy requirements, is attracting the attention of the British speculator, not only from the standpoint of gambling in rubber company shares but in carrying on speculative transactions in the actual commodity itself. A pamphlet just issued in London claims to show the advantage at the present juncture of purchasing actual rubber instead of shares in one of the rubber plantation companies. Assuming a rise in the price of rubber to 2s., the booklet calculates that a purchase of 100 rubber plantation shares at around £2 per share would conceivably produce a profit of £50 in capital value, whereas a purchase of five tons of rubber at 1s. 4½d., and subsequently sold at 2s., would give a net profit of over £300. It is a significant commentary on restriction, the original aim of which was the stabilization of the price of rubber, that now after five years it is providing speculators with such an attractive field.

Christmas Seals

THERE is not much that is new to be said about the annual sale of Christmas seals which is again underway. The merits of the plan are well known. The success of the annual effort has become traditional. But many employers may not realize that a large part of the funds derived from the sale of the seals is used in public health activities of direct benefit to the industrial concerns of the nation.

To the owners of many small factories who are unable to establish health services on account of expense, the increasing attention given to industrial health by volunteer health agencies, notably the tuberculosis associations, is a boon.

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NEWS of the INDUSTRY

Financial-Business
Building Operations
Personals
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JAMES NEWTON GUNN SUCCUMBS TO ILLNESS

Former Vice-President of United States Rubber Company Dies at Age of 60 Years—Prominent in Rubber Circles—Noted as Business Engineer.

JAMES NEWTON GUNN, a prominent figure in the automobile and rubber industry, died at his home, 145 East 54th Street, New York City, on the evening of November 26, after a long period of ill health. At the time of his death he was 60 years age.

Mr. Gunn won early recognition as a production engineer and business consultant in the automobile industry when he was called to the Studebaker Corporation as general manager during the early days of automobile manufacture. His work in this connection was of such a high efficiency that in 1915 he was called to the United States Rubber Company as vice-president and director and later was elected president of its subsidiary, the United States Tire Company. In 1923 he retired from business, but soon entered the engineering field again as a consultant. He served as receiver for the Hodgman Rubber Company and on the engineering staff of Lockwood, Greene & Co., at the same time acting in an advisory capacity for several other corporations.

For the last few months, however, Mr. Gunn has been in ill health and has had to retire from most activities. He was 60 years old.

Won Early Recognition

Mr. Gunn was born and received his early education in Springfield, Ohio. He is credited with having invented the vertical filing system and other card index systems while connected with the Library of Boston and began very early in his business career to work out problems of business management and efficiency systems, later organizing the firm of Gunn, Richards & Co. In this connection he served in advisory capacities with the Regal Shoe Company, Campbell's Soup Company and the Pennsylvania Steel Corporation. During the World War Mr. Gunn was a member of the War Industries Board as a representative of the Rubber Association. He was also president of the Lincoln Highway Association and did much to bring that road to its present excellent condition.

Upon the inauguration of the business school at Harvard University, Mr. Gunn was asked to assist in the preparation of the curriculum as a member of the administrative board of the school and also served as one of the first lecturers. He was also active in his interest in Columbia University and the Massachusetts Institute of Technology.

James Newton Gunn

Mr. Gunn endeared himself to all with whom he came in contact and his keenness of mind and his efficient and thorough handling of business problems won for him a profound respect from the business world.

The funeral services were held in the chantry of St. Thomas' Church, 53rd and Fifth Avenue, New York, on November 29 and burial was at Woodlawn Cemetery. The honorary pallbearers were business associates and friends of Mr. Gunn and his family. Among them were Harry T. Dunn, president of the Fisk Rubber Company; J. S. Cobb, of Abercrombie & Fitch; E. J. Bliss, of Boston, president of the Regal Shoe Company; S. K. Seward, of Curtis, Mallet-Prevost & Colt; George A. Chamberlin, C. J. Butler, of Detroit, and W. V. Logan, both of the United States Rubber Company.

The Goodyear Cotton Company of Canada, Ltd., has reported for the year ended September 30, 1927, a net profit of $140,299 after all deductions. The common stock of the concern is held by the Goodyear Tire and Rubber Company of Canada, Ltd.

WOLVERHAMPTON PLANT TO OPERATE DEC. 15

Plant Constructed in Record Time Will Produce 2,000 Tires Daily—Is Sixth Goodyear Plant to Operate at Separate Unit and Third Outside U. S.

THE new British plant of the Goodyear Tire and Rubber Company, at Wolverhampton, England, is scheduled to begin production on December 15. The fabrication of the first tire will be accompanied with ceremonies fitting the event, similar to the recent building and curing of the first tire produced at the Goodyear Australian plant, reported in the last issue of THE RUBBER AGE, when nineteen men from the Akron organization performed the nineteen separate operations.

Ground was first broken for the Wolverhampton factory on July 25 and the completion of the plant has therefore been done in record time. When put into full capacity production the plant will turn out 2,000 tires per day. To aid in starting operations and as a nucleus for the building up of a skilled labor force, 50 men picked from the Akron plant are enroute to England for the opening.

The Goodyear representative in England for many years, Charles P. Skinner, is the managing director of the new plant, with T. A. Linnane as superintendent.

When this factory is completed it will be the sixth Goodyear factory in operation and the third to be constructed outside the United States.

It has been estimated that when producing at capacity, the British Goodyear Company will be supplying seven per cent of the total British tire consumption. Goodyear equips Hudson, Essex, Chrysler and several other American makes popular in the British market and will seek equipment of British cars as well.

General Tire Co. Conference

The annual conference of General Tire and Rubber Company distributors, held in Akron during the last week of November, was attended by over 250 dealers and closed with a banquet at the Portage Hotel, at which William F. O'Neil, president of the company, was the principal speaker.

Benn Herr, assistant sales manager, who was in charge of the conference, outlined next year's selling plans. Other speakers were A. B. Stiller, advertising manager, who spoke on the program for the coming advertising campaign; Frank Gable, factory manager, and Harry Conroy, chief compounder.

N. T. D. A. IS OPTIMISTIC DESPITE HARD YEAR

Col. Eva Is Returned to Presidency to Continue Fight to Put Tire Dealers' Ass'n on Sounder Basis—Finances and Membership Still Give Trouble.

ALTHOUGH the reports of their officers reflected a rather discouraging year with plenty of financial troubles and a hard fight to increase the membership, members of the National Tire Dealers' Association made optimism the keynote of their four-day annual meeting which closed at Louisville on November 17. Approximately 250 tire dealers were in attendance and perhaps half as many representatives of tire manufacturers and others interested in the dealers' trade.

That Col. H. V. Eva's admirable effort during the last year to put the Association on a sounder basis was approved by the members was shown by their action in returning him to office for another year. Col. Eva is from Duluth. S. B. Harper of Fort Smith, Ark., and A. M. O'Leary of Chicago were re-elected first and second vice-presidents. A majority of the board of directors was also returned to office.

Bigger Discounts for Dealers

The outstanding piece of work which Col. Eva was able to report for the past year was an increase in manufacturers' discounts to dealers which is said to have been a result of the Association's efforts. This additional discount amounts to 5 per cent and was granted a few months ago. The Association immediately put on a campaign to induce the dealers to keep the discount for themselves instead of giving it away under the stress of severe competition.

The fight to increase the membership during the past year had been in the hands of C. A. Meyer, to whom the Association gave the title of managing director. The campaign brought a fair number of members onto the membership list, but the loss of others left the total at the end of the year not much above the few hundred who were in good standing twelve months previous. Furthermore, the cost of getting new members averaged $35 each and since the dues have been only $25 each, the administration found the campaign quite a severe financial burden. A deficit of over a thousand dollars was incurred during the year. The sum of $6,000 which was underwritten by members of the board at the beginning of the year in order to clear up outstanding indebtedness has not yet been repaid and was the cause of some friction during the year.

The employment of a secretary-manager to conduct a central office for the organization had been regarded as a forward step but was annulled by the action of the directors who decided at Louisville to abolish the office. H. F. Porter had been employed in October to fill the office and his term of service will end on December 31. The manager-director, C. A. Meyer, will be asked to look out for the work which was designed for Mr. Porter, as well as continuing his membership work in the field.

The scale of membership dues was changed at the convention so that members will be assessed according to their annual business. Members whose annual business is $15,000 or less will pay $10; those doing between $15,000 and $50,000 will pay $25, while those doing more than $50,000 will pay $50.

Only a few speeches and papers were given a place on the Louisville program, most of the time being devoted to discussion of trade problems. Most of the problems before the convention were carried over for the next annual meeting in order that the officers may have more time in solving them. Boston was selected as a meeting place for next year.

THE NEW MODEL "A" & THE TIRE INDUSTRY

With the appearance of the new Ford car, and its remarkable reception by the public, the whole automobile industry has begun to breathe more easily. The advent of the new model is of interest to the rubber industry not only on account of the close relationship between the automobile and rubber industries but also because of the change in the size of the Ford tires from 29x4.40 to 30x4.50. The importance of this change is apparent when one considers that it will raise the latter size to undisputed leadership in the tire line. Of immediate interest is the necessary change-over in the tire factories, hundreds of new molds being required by the companies furnishing tires to Ford.

Barr Addition Ready

The new addition to the Barr Rubber Products Company plant at Sandusky, Ohio, will be ready for occupancy on January 1, according to a recent statement. The building is now virtually completed and only awaits the installation of the new machinery and equipment. The new addition will house the toy balloon department and will permit a greatly increased production.

A new mill is also being installed in the rubber ball department, replacing the old one and increase the output of this department also.

New Exchange Committees

The board of governors of the Rubber Exchange of New York has announced the appointment of the floor and quotation committees for the ensuing year. The new quotations committee consists of Louis D. Raabin, chairman; Alfred Croft and James R. Shannon. The floor committee is headed by J. Frank Dunbar, and is composed of the following other members: Arthur L. Dunn, Charles H. Moore, William D. Paul and Harry T. Kraft.

NO SURPRISE SEEN IN QUARTERLY STATISTICS

Rubber Association Figures Show Decline in Consumption of Crude Rubber, But Increase in Sales Value of Manufactured Goods Shipped.

THE statistics on the rubber manufacturing industry covering the third quarter of the current year, compiled by the Rubber Association of America from its quarterly questionnaire, show a decline in production in the manufacturing field, but an increase in the total sales value of rubber goods shipped.

The slowing up in production in the last quarter is clearly evident from the figures given and shows not only a lower consumption of crude rubber, but also a decrease in the daily average of workers employed in the industry. Both of these declines, however, can be attributed to seasonal curtailments, and the present healthy state of the industry is best indicated by the figures on the sales value of rubber goods shipped by the manufacturers during the same quarter.

Total Value of Products High

The total sales value of manufactured rubber products invoiced for the quarter was $309,910,000 as compared with a total value of $285,972,000 during the previous quarter. Of this amount, and in the face of a decline in automobile sales and the total cessation of Ford production, the sales value of tires and tire sundries shipped amounted to $223,488,000 as compared with $211,948,000 during the second quarter, while the sales value of all other rubber products shipped totaled $86,522,000 for the quarter as against $74,024,000 for the second quarter. In the sales value of tires, solid and cushion tires were the only lines to show a decline during the last quarterly period.

The most pronounced gain in sales value of any one class of rubber manufactured goods was in the case of rubber boots and shoes which jumped over $10,000,000 ahead of the second quarterly figures.

There was a slight surprise in the reclaimed rubber figures for while it was to be assumed that consumption of reclaimed would show a falling off in line with the general curtailments in production in the industry, the trade expected to see the production of reclaimed equally as high, at least, as in the previous quarter. The decline was slight, however, the figures being 39,449 tons produced in the last quarter as against 41,197 tons in the second quarter.

The Rubber Association figures on crude rubber consumption which are estimated to represent 92 per cent of the consumption for the entire industry in the United States, totaled 82,073 long tons for the third quarter as compared to 94,983 tons for the previous quarter. These figures brought up to represent 100 per cent are included in the statistical tables in this issue of THE RUBBER AGE.

GOODYEAR REFINANCING PLAN OPPOSED BY SUIT

Minority Stockholder Sues to Restrain Company From Completing Refinance Plan—Program Had Already Been Accepted By 85% of Stockholders.

A SUIT instigated by minority stockholders to compel the Goodyear Tire & Rubber Company to pay to the 5,000 stockholders reported to be represented in the action the sum $15,000,000 as accrued dividends on the preferred stock over the last five years was filed in the common pleas court of Cleveland on November 23.

The action comes at a time when the refinancing plan of the Goodyear Company is virtually completed through the acceptance on the part of 85 per cent of the stockholders of the new first preferred stock in exchange for the old preferred stock. P. W. Litchfield, president of the company, in commenting on the new legal action, stated that the Goodyear company was not disturbed by the suit and that all issues in the case has been carefully studied before the adoption of the present refinancing plan and had been approved by eminent Ohio and New York counsel as strictly in conformity with the law.

The plaintiff in the new suit, Kent P. Johnson of Kenton, Ohio, names nineteen of the company's directors as defendants and asks the court to restrain the company from exchanging any issues of capital stock prior in dividends for the old capital stock which the petition asserts has been illegally invalidated by the refinancing program. The company, according to the petition, owes $25 on each share of the old preferred stock and planned to pay it by issuing to stockholders five shares of the newly authorized first preferred for four shares of the old stock. This plan was unnecessary, the plaintiff contends, in view of the fact that the company had on hand $35,000,000 worth of the old preferred issue in its treasury which could have been issued to pay off the accrued dividends. The petition also challenges the statements circulated to the stockholders by the company in support of the new refinancing plan.

The suit comes as a last-minute attempt to delay the final steps in the refinancing plan as the closing date for transferring the old stock for new was November 30 and the new stock was to have been issued on December 1. No great concern is felt, however, by officials of the company, over the suit and it is believed that the new obstacle to the refinancing plan will be speedily overcome.

British exports of rubber footwear continue to hold up but show no increase. During October, 1927, the United Kingdom exported 22,417 dozen pairs of rubber boots and shoes and canvas rubber-soled shoes as compared with 25,782 dozen during September, according to the Department of Commerce.

EXHIBIT SHOWS WIDE USE OF CARBON BLACK

Display of the Numerous Varieties of Articles in Which Carbon Black is Used, Including Tires, Tubes, Mechanicals, Footwear, Wire, Phonograph Records, etc.

BINNEY & Smith Company, pioneers in the manufacture of black pigments and makers of Micronex, are featuring at their New York office, 41 East 42d street, the unusual display shown in the accompanying photograph. A large special display case has been installed and now houses an extensive exhibit of well-known products in which the company's blacks have been used.

Of special interest to rubber men is the showing of products in which Mirconex has been employed. These include tires, footwear, soles and heels, auto topping, rubber tubing and hose, rubber paving blocks, proofed goods, and rubber insulation materials including telephone apparatus, radio panels and rubber covered wire.

The exhibit occupies a prominent place in Binney & Smith visitor's room and a special invitation to view it is extended to the trade.

Goodrich Sells Building

The B. F. Goodrich Company building at 57th Street and Broadway, New York City, has been sold to Franklin Pettit for $1,500,000. It is reported that the Goodrich Company will not give up its occupancy of the building until late in the coming spring and no announcement has as yet been made as to where the new executive headquarters of the company in New York will be located.

New Brunswick Plant Reopened

The United States Rubber Company will reopen its New Brunswick factory building, which has been idle for several years, and will use it for storage purposes and particularly as a warehouse and distributing point for crude rubber. A consignment of approximately 900 tons from the United States Rubber Company's plantations in Sumatra arrived at the plant late in November. The plan of the company is to use the New Brunswick building for the storage of crude rubber arrivals and distribute the rubber to the various factories of the company according to their periodical requirements.

Sanitary Rubber Company

The Sanitary Rubber Company, Providence, R. I., manufacturers of rubber aprons and various other rubber goods, will open their branch plant at North Attleboro, Mass., this month, in order to take care of orders which they are unable to handle at Providence. It is rumored that the concern eventually intends to move their entire activities from Providence to North Attleboro, but no confirming statement, as yet, has been made by officials of the concern.

CABOT PLANT IN TEXAS NEARING COMPLETION

Work on the new carbon black factory which Godfrey L. Cabot, Inc., is constructing at Skellytown, Tex., is progressing rapidly, and it is expected that the plant will start operations early in December.

The Santa Fe Railroad completed on October 26 the twelve miles of railroad which will serve the plant, and it had been estimated that with the 250 men employed in the construction force by the Cabot Company, the factory could be ready for operation five or six weeks from the date on which heavy construction materials were first received.

It is expected that by mid-winter the plant will be producing over 25,000 pounds of carbon black daily, and plans have been worked out to double the capacity of the plant on short notice whenever the state of the market justifies it.

Innovations in the plant include welded tables, a Duerr air separator, electric drive, belt conveying and gravity conveying, a new type of packer and a new type of press.

Serugo Rubber Co.

The B. and M. Rubber Company, of Cuyahoga Falls, Ohio, has been succeeded by the Serugo Rubber Company, which has recently been organized with William Metzler, as president and sales manager; Charles Shorr, treasurer and production manager, and John Hatfield, vice-president and general manager. The company will engage in the manufacture of finger cots and other rubber sundries.

SEIBERLING ANNOUNCES TIRE INSURANCE PLAN

Protected Service Scheme Is Revolutionary in Retail Tire Selling—Means Virtually Free Service on Tires for One Year From Purchase.

WHAT may be considered as a revolutionary move in retail tire selling has been made public by the Seiberling Rubber Company in announcing its new "protected service plan," in connection with the sale through the authorized distributors of the Seiberling tires.

According to the announcement contained in a brochure which has been sent by the company to every Seiberling dealer, each Seiberling distributor will be entitled to contract with the Seiberling Protected Service Corporation, a subsidiary of the Seiberling Rubber Company, under which contract the dealer will be authorized to issue certificates of protection for every Seiberling All-Tread tire sold. This certificate gives absolute protection to the purchaser against tire damage from accident, bruise, blow-out, wheel alignment, negligence, under-inflation and any other road hazard. This protection will continue, under the plan, for a period of one year from the date of the purchase by the user.

In actual practice this virtual guarantee means the free servicing of all Seiberling tires for a period of one year from the purchase date. The plan as further explained by the New York agency of the Seiberling Rubber Company calls for the replacement of any tire which is damaged beyond repair by a new tire on the basis of its value according to the number of months run since the purchase date. For instance, in the case of a tire purchased on December 1, 1927, which is ruined on February 28, 1928, a new tire will be furnished at a cost based on 3-12th of the original purchase price. On the other hand, if the tire is only punctured and easily repairable, it will be placed in serviceable condition without any charge.

This startling announcement has been made by the Seiberling Rubber Company coincident with their announcement of the stupendous advertising campaign laid out for the coming year and coupled with a weekly radio broadcasting program in the interests of Seiberling tires.

Firestone's Philadelphia Branch

The activities of the Firestone Tire and Rubber Company in Southern Pennsylvania, New Jersey and Delaware will be directed from their new headquarters in Philadelphia, where they have taken over the four-story modern fireproof structure at the corner of 23rd and Wood streets. In the new building will be located the wholesale department of the Firestone Footwear Company and the tire servicing and sales departments, as well as the coach and cab division, which serves the taxicabs and bus lines of the city. The branch will be under the management of John M. Bushey.

Trade School in Liberia

In connection with its plantation project now under way in Liberia, the Firestone

James H. Gaule

Plantation Company plans to establish on the property a trade school, where the natives will be taught the rudiments of useful occupations in order that a supply of semi-skilled labor may be available with the growth of the company's planting developments.

James H. Gaule has been appointed to organize the trade schools in Liberia, and is now visiting various trade schools in this country for the purpose of studying methods and systems. It is announced that he will sail shortly for his new post, and that the establishment of the school will be inaugurated at once.

RUBBER TRADE ASS'N TO HOLD ANNUAL DINNER

The Rubber Trade Association of New York will hold their annual banquet on December 15 at the Biltmore Hotel and in view of the enjoyable affairs which they had given in the past, the occasion is being looked forward to by the rubber trading fraternity with a great deal of pleasant anticipation. The dinner committee this year is headed by F. B. Peterson, chairman, who has as his associates L. V. Stiles and J. S. Rodenbough.

Edison Imports Plants

Thomas A. Edison has sent a sum of money, said to be several hundred dollars, to British South Africa for the collection and shipment of an assortment of rubber-producing plants which he will use in his present effort to discover a rubber plant which can be successfully grown in the continental United States.

TIRES MADE ENTIRELY OF GUAYULE GROWN IN U. S.

The Continental Rubber Company of New York has announced that it now has under road test a number of automobile tires made entirely of guayule rubber grown in California. Results will be announced as soon as the tests are completed. Satisfactory results have already been shown in laboratory tests in comparison with tires of similar construction made in the usual way with plantation rubber. The guayule rubber tires have been given the brand name "Ampar," which G. H. Carnahan, president of Continental, has devised from the words "American Parthenium," the latter denoting the botanical family to which the guayule plant belongs. Since these tires were built also with American cotton, they are made completely with materials produced in the United States, and are probably the first to be so made.

Although the guayule shrub was grown in California, it was taken to Mexico for extraction since Continental has not yet installed an extraction plant at their California plantation. The rubber was then shipped to an American tire factory where the tires were built.

Continental has also completed a four-reel motion picture of its operations in California and Mexico, two reels being devoted to the cultivated shrub and two to the wild shrub. These will be shown before various gatherings of rubber men during the next few months.

MOVING PICTURES SHOWN OF RUBBER PRODUCTION

Members of the New York Rubber Exchange, on December 2, were treated to an interesting exhibit by Fred T. P. Waterhouse of moving pictures taken on various rubber estates in the Far East.

Mr. Waterhouse, a member of the exchange and president of Fred Waterhouse, Ltd., and who controls several estates of his own at Tangong Olak and Pahang, Malay Peninsula, took the pictures himself while on a recent trip to the East. They cover not only scenes on his own estates but also views of the plantations of the Goodyear Company and the United States Rubber Company and a few Dutch estates.

The pictures particularly showed the new methods adopted in bud-grafting and seed selection. The films also told the story of crude rubber production from the clearing of the jungles to the loading of crude rubber on ships enroute to the American or British markets.

CATALPO!

CATALPO!

Tire Dealers' Sales in Past Season Set New High Record

Rubber Division of Department of Commerce Uses Dealers' and Manufacturers' Figures in Computing Probable Sales of Casings and Tubes to Motorists Since Autumn of 1924.

MORE tires were sold to motorists during last spring and summer than in any previous six-month period in the history of motoring, the Rubber Division of the Department of Commerce shows in a statistical survey released on December 2. On the basis of its semi-annual figures of dealers' stocks and the Rubber Association's figures of replacement tire sales, the Division deduces that from April 1 to October 1 of this year the tire dealers of the United States sold 27,060,000 casings and 33,420,000 inner tubes. This is an increase of better than 2,000,000 casings over the summer of 1926.

The semi-annual reports of the Rubber Division show average stocks of tires and inner tubes per dealer as of April 1, and October 1, for each year beginning October, 1924. Usually about 35,000 dealers report stocks in each survey. Trade estimates are that there are about 100,000 active tire dealers in the United States. Multiplying the average stock per dealer by 100,000 gives the following estimate of stocks held by dealers at semi-annual intervals:

STOCKS HELD BY DEALERS

	Casings	Inner Tubes
October 1, 1924.....	5,360,000	7,990,000
April 1, 1925.....	6,220,000	10,210,000
October 1, 1925.....	5,660,000	9,910,000
April 1, 1926.....	6,390,000	11,960,000
October 1, 1926.....	4,990,000	9,380,000
April 1, 1927.....	7,060,000	12,090,000
October 1, 1927.....	5,760,000	10,310,000

Monthly statistics of the Rubber Association of America on manufacturers' domestic tire and inner tube shipments other than for original equipment show sales to dealers in corresponding semi-annual periods as follows, the figures being raised to 100 per cent in accordance with the association's estimate that as reported they are 75 per cent. complete:

FACTORY SALES TO DEALERS

	Casings	Inner Tubes
Oct., 1924-March, 1925..	18,210,000	26,570,000
April, 1925-Sept., 1925..	23,460,000	36,210,000
Oct., 1925-March, 1926..	13,790,000	20,810,000
April, 1926-Sept., 1926..	23,530,000	32,570,000
Oct., 1926-March, 1927..	19,650,000	24,280,000
April, 1927-Sept., 1927..	27,760,000	31,640,000

Consideration of fluctuations in dealers' stocks from October 1 to April 1 in connection with shipments to dealers in the same period makes possible an estimate of net retail sales by dealers to consumers in semi-annual periods:

DEALER SALES TO CONSUMERS

	Casings	Inner Tubes
Oct., 1924-March, 1925..	17,350,000	24,350,000
April, 1925-Sept., 1925..	24,020,000	36,510,000
Oct., 1925-March, 1926..	13,060,000	18,760,000
April, 1926-Sept., 1926..	24,930,000	35,150,000
Oct., 1926-March, 1927..	17,580,000	21,570,000
April, 1927-Sept., 1927..	27,060,000	33,420,000

In the year ended October 1, 1925, the Rubber Division observes, tire dealers sold 1.47 inner tubes with every casing, on the average; in the next year, 1.42 inner tubes per casing; and during the year just ended, 1.23 inner tubes per casing.

If these estimates are reasonable, the relative consumption of inner tubes has declined very sharply in the last year. Gasoline consumption statistics show that cars have run more miles than in former years and indicate that this reduced tube consumption is not due to more rapid wear of casings. Repairing of inner tubes, which was uncommon before 1925, has become customary since that year of high tire prices.

The effects of the rubber conservation campaign in reducing sales of tires and inner tubes is plainly evident in the period October, 1925-September, 1926, as compared with the preceding year, and shows what was accomplished by appeal to American motorists for conservation of rubber when such extreme measures appeared necessary.

Accident at Easthampton

Two employees of the Easthampton Rubber Thread Company, Easthampton, Mass., were fatally burned and a third is on the danger list at the Dickinson Hospital, Northampton, after an accident in the company's vulcanizing plant on November 23. The accident is said to have been caused by the failure to reduce the steam pressure when removing a vulcanizer door weighing a ton. After removing part of the bolts, the pressure blew the door off, stripping the threads of the remaining bolts.

PASSAGE PROBABLE OF RUBBER RESEARCH BILL

The bill recently introduced in the House of Commons providing for the collection of a contribution from rubber manufacturers in Great Britain and Northern Ireland to the funds of the Research Association of British Rubber and Tire Manufacturers and mentioned in the last issue of THE RUBBER AGE, has had its first reading in Commons and stands an excellent chance of passing Parliament.

The bill has the approbation of the Board of Trade and the Department of Scientific and Industrial Research and members of all parties are actively supporting it. It also has the endorsement of seventy individual British rubber manufacturers. The joint levy committee which framed the bill consisted of the following leaders in the rubber industry who were nominated by their respective associations: L. B. Atkinson (Cable Makers' Association); Sir George Beharrell (India-Rubber Manufacturers' Association); Sir Walrond Sinclair (Institution of the Rubber Industry); Lt.-Col. J. Sealy Clarke (Research Association of British Rubber and Tire Manufacturers); Eric Macfadyen (Rubber Growers' Association); H. D. Cowan (Rubber Trade Association).

It is therefore expected that when the bill comes up for final passage it will go through successfully as an "agreed measure."

NEW PAVING BLOCKS IN LONDON DISPLAY

One of the most interesting exhibits in the Public Works, Roads and Transport Congress and Exposition, which has just been held in London, was that of Rubber Roadways, Ltd., an undertaking formed some time ago with the object of encouraging experimentation and demonstrations with rubber paving. The display included specimens of several types of rubber road blocks now being tested by the firm.

In another booth, that of Universal Rubber Paviors (Manchester, 1923), Ltd., specimens were shown of rubber paving laid in New Bridge street, London. This paving has now been subjected to traffic, the denseness and heaviness of which is unequalled in any other London thoroughfare, but the wear of the rubber in a period of over twelve months has been quite negligible. Moreover, there has been no moving or creeping whatever, such as was the case with the rubber blocks previously laid around the Cenotaph in Whitehall.

Quezon at Firestone Plant

Manuel L. Quezon, one of the foremost leaders of the Philippine independence movement and former president of the Philippine senate, was a guest at the Firestone Tire and Rubber Company plant at Akron, December 1, and after a luncheon in his honor at the Firestone clubhouse, made an inspection trip through the factory. Other Akron factories were also visited during the day.

The trip to the Firestone plant was especially significant in view of Mr. Quezon's persistent opposition in the past to any large scale rubber plantation development in the Philippines on the part of American rubber manufacturing interests and in the light of Mr. Firestone's past interest in the Philippines as a logical source for "America to grow its own rubber."

Trenton Plant May Reopen

Trenton rubber circles are discussing the report that one of the larger Akron tire companies is considering the purchase of the former Ajax tire plant in Trenton, where it is said that a second line tire is to be manufactured. The recent closing down of the plant has meant considerable unemployment and a confirmation of the report is being eagerly awaited.

SEIBERLING ANNOUNCES ADVERTISING PROGRAM

What is heralded as the "most spectacular advertising campaign which ever has appeared in any publication for any product," supplemented by weekly broadcasting through 27 stations of special musical programs, is announced by the Seiberling Rubber Company as their advertising policy for the coming year.

The broadcasting by radio of the "Seiberling Singers" will be inaugurated December 13 and will continue at 8 P. M., eastern standard time, every Tuesday for 52 weeks. Combined with this form of advertising, the advertising program in newspapers and magazines calls for elaborate displays reaching a wide circle of readers. The 1928 "advertising book" of the company, which will contain all details and list all advertising material for the year, will be in the hands of Seiberling dealers about December 15 and is claimed to cover an advertising program greater than anything that has been yet attempted in the rubber industry.

Akron Gets New Industry

A brand-new industry for Akron, but closely allied to the rubber manufacturing business, will begin operations within the next few weeks. The Palmen Manufacturing Company, of Los Angeles, Cal., has erected a new plant at Mogadore road and will make spare tire covers. Carl Palmen is president and general manager of the concern.

The plant is the fifth to locate recently along the A. C. & Y. Railroad, in the East Akron industrial reserve along the little Cuyahoga River Valley, according to an announcement of the Akron Chamber of Commerce, which attributes the recent move of the Palmen Manufacturing Company to the persuasive inducements of W. W. Hall, the chamber's industrial commissioner.

India Tire Reduces Loans

The India Tire and Rubber Company has announced the reduction of its bank loans by more than $500,000. P. C. Searles, secretary of the company, also stated that there had been a material cut in the inventory statement from $1,343,000 as of December 31, 1926, to $1,045,000, on October 31, 1927.

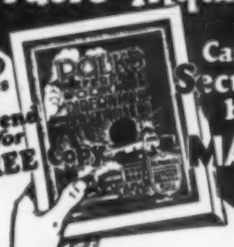
Philippine Rubber

The American Rubber Company, whose plantation is on the Island of Basilan, near Zamboanga, Philippine Islands, is now tapping about 1,500 acres of young rubber and producing about 40,000 pounds of dry rubber per month. They are making all smoked sheet and shipping direct to Akron.

The company also has about 500 acres of rubber that is between two and three years old. It is said to be growing satisfactorily. The company has also established an area on which they are building up a stock of budded rubber, all from proven clones of high-yielding strains. This stock will be used in making additional plantings.

CATALPO!

Orders - Inquiries



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BUCYRUS TIRE PLANT TO RESUME OPERATIONS

The old plant of the Rufenacht Rubber Company at Bucyrus, Ohio, after being idle for the past three years, has been taken over by Homer Keplinger and M. Howard, both of Bucyrus, and will be operated in the manufacture of solid tires for baby carriages, boys' wagons, tricycles, etc. Preparations for cleaning up and the installation and repair of the machinery are already under way.

The Rufenacht company formerly manufactured a high-grade line of pneumatic tires and tubes, but was not able to compete successfully in the market. The firm name under which the plant will now operate has not been announced. The plant has been secured on a three-year lease, with an option to purchase at the expiration of that period.

It is reported that contracts have already been secured by the lessees from two Toledo companies, which will take the entire output of the plant.

Believe Smuggling Curbed

The local secretary of the Rubber Growers' Association in Malaya has cabled to London that a meeting of the Malayan Federal Council the High Commissioner intimated that such information as was at present in their possession seemed to point to the more or less complete curbing of rubber smuggling traffic throughout the southern portion of the Malay Peninsula, where hitherto it has been most rife.

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PUNCTURE-PROOF TIRE CO. IS INVESTIGATED

The blue sky law of New Jersey, which was passed at the last session of the state legislature, has been recently invoked through an order issued by Vice Chancellor Backes compelling the Combination Puncture Proof Tire Company, Inc., 630 Kaighn Avenue, Camden, N. J., to answer a questionnaire and give information concerning its activities. The company is charged with advertising and selling its stock "by deception, misrepresentation and fraud," in Camden and elsewhere in New Jersey. The litigation took the form of a bill filed in the name of Attorney General Edward L. Katzenbach, who sought an order requesting the company to give information which has thus far been refused. The order of the Vice Chancellor asks why an injunction should not issue restraining further sales of its capital stock.

The defendant corporation was chartered in New Jersey on September 11, 1925, with an authorized capital stock of $1,250,000. A prospectus, accompanying the bill of complaint, sets forth that the company had acquired valuable patents, patent rights and processes for the manufacture of puncture-proof pneumatic tires which had "proved to be 100 per cent." The attorney general's office declares that the company never made any tires and never had any manufactured for it, except three sets made by a Baltimore corporation and used for demonstration purposes.

Goodyear Builds J-4

The assembling of a new 200,000 cubic foot, non-rigid airship, manufactured by the Goodyear-Zeppelin Corporation, has been begun at Lakehurst, N. J., according to a recent announcement by Goodyear officials.

The ship, which will be known as the J-4, is a sister ship to the J-3, at present used as a training ship for the navy air forces. The J-4 will be the first of her class to have the recently developed "boat type" control car, which is water-tight and equipped with pontoons, enabling the crew to make emergency landings in the water. The ship will be equipped with two 180-horsepower Wright engines, with a possible speed of 50 miles per hour, and will have fuel capacity to maintain itself in the air for 25 hours.

Carlisle Builds Addition

The Carlisle Tire and Rubber Company, Carlisle, Pa., plans the erection of a new one-story addition to their plant, reported to cost $50,000 with equipment, and construction work will begin at an early date. The Watson Engineering Company, New York City, will be the engineers.

CATALPO!

Financial Items

Rubber and Motors

RUBBER IS ACTIVE ON NEW YORK EXCHANGE

Active Trading Sends Prices of Futures Up to 42-Cent Level—High Speculative Interest in Evidence in Distant Positions—Spot Around 41.00.

THE New York Rubber Exchange has gone through two weeks of exceptionally active sessions with crude rubber prices reaching the highest levels for several months. Buying interest from factories has been strong and persistent in the face of a rising market and the number of transactions dealt in during the fortnight totaled over 11,000 lots.

The interest on the exchange was also highly speculative and future positions were run up to as high as 43.20 for October. December sold as high as 41.00. The tone of the market was essentially bullish and while the active trading showed wide variations between low and high extremes during the sessions, the market soon developed a steadiness at the higher levels which has prevailed since the upward trend in prices began.

The most encouraging feature in the market situation was the return of factory interest in appreciable volume and reflected the renewed production activities in the manufacturing industry.

The efforts on the part of the Malayan government to bring about more strict application of the restriction scheme, coupled with the recent slight decline in London stocks and the return to higher production in the manufacturing field has had the effect of encouraging the trading fraternity to believe that the high stocks now on hand in both the United States and London do not constitute a serious situation and that with the manufacturing industry at full capacity combined with an actual restriction from the Far East in force, the present stocks can easily be absorbed before the machinery of the restriction act can be adjusted to meet the drain on the supply.

SEIBERLING RUBBER PAYS INITIAL COMMON DIVIDEND

The Seiberling Rubber Company has declared its initial common stock dividend of $1 per share on the 218,857 shares outstanding. The dividend is payable on December 15 to stockholders of record November 28.

The annual report of the president of the company, F. A. Seiberling, which was published coincident with the dividend announcement, is only for ten months of 1927, as the fiscal year of the company was changed at the last stockholders' meeting to run November 1 to October 31. Net sales for the months of the current year amounted to $12,367,114.04 and net operating profit before the deduction of charges for depreciation and Federal taxes was $1,356,707.90. After all allowances and payment of dividends on preferred stock, the net amount passed to surplus was $970,428.40.

Latest Stock Prices

	Last Price Dec. 3	Nov. 17	—1927— High	Low
Ajax	9⅝	8¼	13	7½
Firestone	187	151½	187	117
do 6% pfd.	107	106	107⅞	107
do 7% pfd.	107	105¾	107½	98½
Fisk	16⅛	15⅞	20	14⅛
do 1st pfd.	91½	90	100	81
General	178	174½	180	140
do. pfd.	110½	104	110½	99¼
Goodrich	87	79¾	87	42¾
do pfd.	109⅞	107	109⅞	95
Goodyear Com.	58¼	58½	64	50⅝
do pr. pfd.	95¼	95⅛	118⅛	104½
do pfd.	120	117¼	121	98½
Hood	43⅞	43¾	47	39
India	15	15	30	15
Intercontinental	21	—	21	11¾
Kelly Springfield	29⅛	30⅛	32¼	9½
do 1st pfd.	84	95⅞	96	44
do 8% pfd.	88	94⅛	98½	35
Lee	14½	13	14⅞	7
Miller	22½	19⅛	36¾	25½
do pfd.	92½	86¼	104	99
Mohawk	26	22	26	15
do pfd.	60	60	65	65
Seiberling	37	32½	38⅜	21⅜
do pfd.	102½	101	103	96
Star	2½	2½	2½	1½
U. S. Rubber	53⅞	50¼	67⅛	37¼
do pfd.	98⅞	96	111⅜	85¾
U. S. Rubber Reclaiming	—	—	12	12
do pr. pfd.	—	—	24	24
do series A	—	—	15	15

Norwalk Rubber Cuts Loss

The Norwalk Tire and Rubber Company, Norwalk, Conn., reports a net loss for the year ended September 30, of $46,856, after deducting all charges, as compared with a loss of $296,136 for the preceding year.

William B. Miller, president of the company, in his announcement to the stockholders called attention to the fact that bank indebtedness was reduced during the past year from $500,000 to $325,000. The indebtedness has since been further lessened to $200,000. In spite of the loss shown, the company closed the year in a much improved financial position, as indicated by the ratio of current assets to current liabilities of 3.24 to 1.

RUBBER CO. SHARES SOAR ON EXCHANGE

The recent flurry on the New York Stock Exchange carried up with the other active industrial issues the stocks of the leading rubber companies to a point where several high records for the year were reached.

The appearance of the new Ford car and the general feeling that 1928 is going to be a big year for the automobile industry, coupled with the latest financial statements of various rubber companies showing their excellent financial position and the recent announcements of an increase in production schedules from the tire factories, all contributed to the activity in rubber company shares from an investment point of view as well as speculative interest.

Firestone common soared to 187, a new high. Goodrich common went to 87. One of the most startling advances was in Intercontinental which climbed from 15¾ to 21.

Hood Changes Fiscal Year

Coincident with the recent announcement of resumption of dividends on the common stock, the Hood Rubber Company, Watertown, Mass., has changed its fiscal year to coincide with the calendar year. Several years ago, when most of the company's business was done through jobbers, the fiscal year was changed to end March 31. The company's distribution is now largely through its own branches, and it is felt that the results of operations can be more accurately tabulated in the calendar year.

New Exchange Members

The following names have been added to the list of members of the Rubber Exchange of New York, Inc.: William C. Murphy, of John L. Handy, Inc., New York; Marcus Rothschild, of M. Rothschild & Co., New York, and Edwin M. Lavino, of Lavino American and Asiatic Company, Philadelphia. Another addition to the list is Harold L. Bache, of J. S. Bache & Co., New York City.

Closing Prices on Rubber Exchange of New York, Inc.

NOVEMBER 21 TO DECEMBER 3, 1927

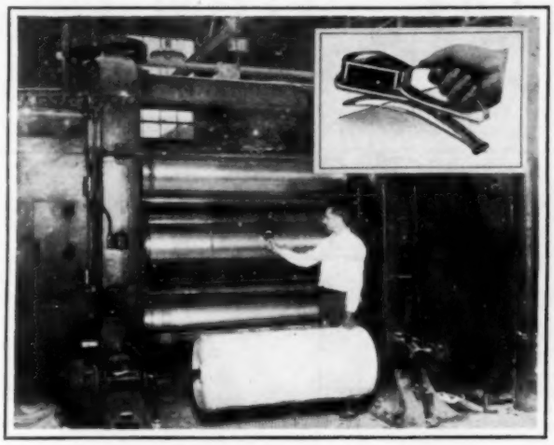
Date	Spot	Dec.	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Sales*
Nov. 21	38.00	37.90	38.30	38.50	39.00	39.10	39.30	39.50	39.80	40.00	40.00	40.40	.....	676
22	38.50	38.40	39.00	39.40	39.70	39.90	40.30	40.40	40.50	40.60	40.80	41.00	.....	819
23	39.20	39.10	39.70	40.00	40.40	40.60	40.70	40.80	40.90	41.10	42.20	41.40	.....	1475
25	40.20	40.00	40.70	41.00	41.30	41.50	41.60	41.70	41.80	41.90	42.10	42.30	.....	1478
26	40.90	40.90	41.60	41.90	42.30	42.60	42.00	42.60	42.70	42.80	42.90	43.00	.....	909
28	41.20	41.00	41.70	42.00	42.40	42.50	42.60	42.80	42.90	43.00	43.10	43.20	.....	970
29	41.00	40.30	41.20	41.50	41.80	41.90	42.00	42.10	42.10	42.20	42.30	42.40	.....	1129
30	40.00	39.80	40.20	40.60	40.90	41.00	41.10	41.20	41.20	41.40	41.50	41.70	.....	1537
Dec. 1	39.90	39.80	40.30	40.70	41.20	41.30	41.30	41.50	41.80	41.90	42.00	42.10	42.20	1537
2	39.90	39.90	40.00	40.40	40.90	41.00	41.00	41.10	41.20	41.30	41.40	41.50	41.60	583
3	40.00	39.70	40.00	40.30	40.80	41.00	41.10	41.20	41.30	41.40	41.50	41.60	41.70	96

(*) In lots of 2½ tons each

New Equipment for Rubber Factories

QUICK READING OF SURFACE TEMPERATURES

AN instrument to provide a convenient means for reading the surface temperature of rubber calender rolls and other rubber factory equipment in which heat is used is being marketed by the Cambridge Instrument Company of New York. It is known as the Cambridge Surface Pyrometer and is already in use in many factories. It is also used in the paper and textile industries.



Pyrometer in Use on Calender Rolls

The instrument consists of a sensitive, thin, flat-strip thermo-couple with the junction at the mid-point. The thermo-couple is stretched across the ends of an inverted bow spring fixed to the underside of a metal casting and its ends connected to a millivoltmeter. When using, the thermo- couple strip is simply pressed into contact with the heated surface. The response to temperature conditions is almost instantaneous. The instrument is calibrated to read directly in degrees, thus obviating the necessity of calculations.

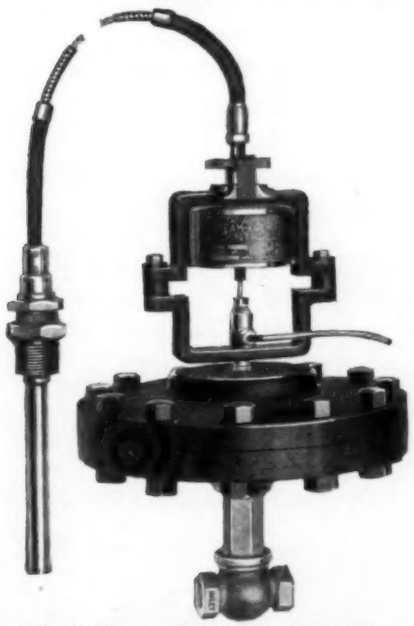
The pyrometer comes in a hand model and an extension model. The former is used in taking the temperature of easily accessible places. The standard models are designed to take readings on curved surfaces but a flat surface adapter is available to make it practical to take readings such as on vulcanizing presses.

The Cambridge Company advises that it is not necessary to stop the machines in order to take the surface readings.

The ease with which readings are taken is shown in the accompanying illustration. The inset shows a close-up sketch of the instrument. The hand model weighs 18 oz.

Steam-Operated Temperature and Pressure Controller

After a number of years of research, a steam-operated controller for governing temperatures and pressures has been developed by the C. J. Tagliabue Manufacturing Company, Brooklyn, N. Y. The two principal forms of automatic control up to this time have been the self-operating and the air-operated types. In the former the temperature changes at the thermostat bulb expanded or contracted a bellows which opened or closed the steam valve as required. In the air operated type the capsular spring reacted to the sensitive bulb and operated a tiny air valve which governed the flow of compressed air to a diaphragm-motor valve. The one was weak and sluggish and the other required a constant supply of clean and dry compressed air which was lacking in many plants.



"Tag" Steam-Operated Controller

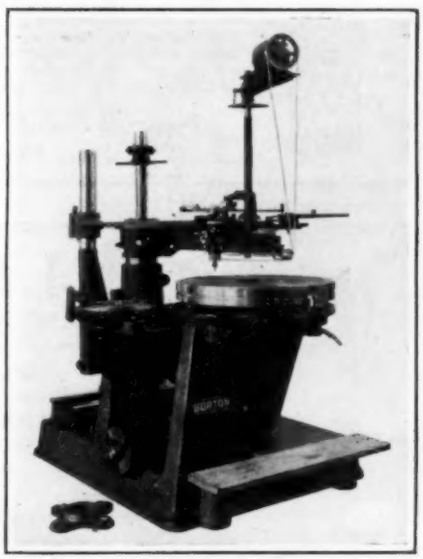
The new Tag steam-operated controller, on the other hand, is a device which utilizes a portion of the steam which heats an apparatus to obtain enough power to work the valve, the opening and closing of which governs the temperature of the apparatus where a certain temperature must be maintained. Power is obtained without waste from the pressure of the steam. Variations in this pressure do not affect the accuracy of control, for the differential pressure above and below a diaphragm, rather than the entire pressure, is utilized.

The illustration shows a single system, direct-connected type for regulating temperature. It is also made in a wall type mounted on a wall bracket.

NEW GORTON MACHINE FOR LETTERING MOLDS

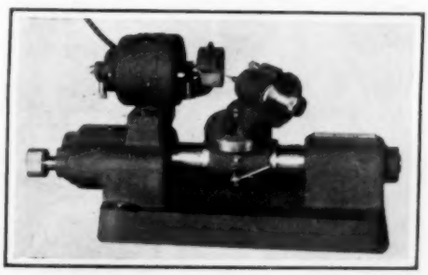
A new model tire mold lettering machine designed to take care of the heaviest steel tire molds in the shortest possible time has been announced by the George Gorton Machine Company of Racine, Wis. It has a much heavier cutterhead, spindle and pantograph than were in the former models made by the company. Unlike the smaller machines, the new model is provided with an indexing arrangement for indexing each letter which promotes uniformity and expedites the work.

The revolving table, which is 34 inches in diameter, is capable of carrying a load of 8,000 pounds safely and is mounted on heavy ball bearings. The cutter head and link is of heavy and rigid construction and can be moved about by means of the tracing arm without effort.



Gorton Mold Lettering Machine

The smaller of the accompanying illustrations shows the Gorton cutter grinder, which is used in conjunction with many tire mold letter machines. This machine can be used for sharpening straight shank cutters and when equipped with bushing can be used for taper shank cutters also.



Gorton Cutter Grinder

RUBBER CLAYS of the HIGHEST QUALITY

ARGOSITE CLAY

ULTRA FINE
REMARKABLY ADHESIVE
UNMATCHED PURITY

CONGAREE CLAY

EXCEEDING STANDARD
SPECIFICATIONS

UNITED CLAY MINES CORP'N. **TRENTON, N. J.**

Perfect Beads

Entire freedom from bead trouble in the construction of straight side tires is assured by the use of either National "(Patent)" High Tensile Strength, Flat Woven, Bead Braid on our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

Write for working samples of either National flat braid or Pratt cables (no charge to tire manufacturers) and full information as to our products and service.

Our engineering department tests beads and furnishes complete confidential reports as to their stretch, set and bursting point, without charge. Inquiries solicited regarding this special service.

National Standard Company
Niles, Michigan

RUBBER DRYERS

The Hunter Process
in
The Carrier Ejector System Dryer

The successful drying of Rubber is essentially a problem of humidity control. The patented Hunter Process is used exclusively in Carrier Dryers. Carrier automatically controlled dryers reduce time, space and milling costs.

Write concerning your problem

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FOR THE RUBBER TRADE

"TIRE" BRAND SUPERFINE
Rubber Sulphur
"TUBE" BRAND VELVET
Rubber Sulphur

Specify "Tire" and "Tube" Brands on your orders. This will assure you of Stauffer quality and service.

Stauffer Chemical Co.
Houston Texas
San Francisco, Cal. Chauncey, N. Y.

EMBOSSING CALENDERS

For Artificial Leather, Oil Cloth,
Carriage and Automobile Covers

DRYING MACHINES

with Copper or tinned iron Cylinders for Cotton Ducks, Drills and Sheetings

The Textile-Finishing Machinery Co.
OFFICE, No. 83 EXCHANGE PLACE
PROVIDENCE, R. I.

The CARTER BELL MFG CO

CARTER BELL STANDARD SINCE 1903 RUBBER SUBSTITUTES

150 Nassau Street New York

Bishop Engineering Corp.

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RECLAMATION and
CONSERVATION of RUBBER

ENGINEERING DIVISION — Complete Plants Engineered; Consulting Service to the Industry; Statistical Reports.

RESEARCH DIVISION—Laboratory Tests and Reports.

SALES DIVISION — Domestic Sales and Exporters of Reclaimed Rubber.

E. Akron P. O. Bldg. Akron, Ohio

AMERICAN TIRES FAVORED IN CUBAN TARIFF CHANGE

Exporters of tires and tubes from the United States to Cuba are expected to benefit from the new schedule of Cuban import duties which went into effect on October 26. The new duties on tires and tubes are on a specific basis. The rate for American tires and tubes is 32 cents per kilogram; the general rate, which applies to all other countries, is 40 cents per kilogram.

The old tariff was on an ad valorem basis, and while the United States was favored to the same percentage it frequently worked out that countries having depreciated currencies could ship tires and tubes into Cuba with smaller duty payments than could the United States. On a specific basis such an advantage for foreign countries will be impossible.

Footwear Ads Effective

The cooperative advertising campaign of British rubber footwear manufacturers is having remarkably satisfactory results, according to reports reaching the Rubber Growers' Association. A temporary shortage has been caused in the supply of rubber Wellington boots. The association reports that the manufacturers were much surprised at the demand which the campaign aroused and many are working at high pressure to keep up with current orders.

High boots in colored rubber to match colored raincoats and umbrellas were shown at the Shoe and Leather Fair in London. The popularity with which the public will receive these goods is still in doubt. A better demand for crepe rubber soles is reported.

CLASSIFIED ADVERTISING

10 cents a word, minimum charge $2.00, payable in advance.
Address replies to Box Numbers
THE RUBBER AGE
250 West 57th St., New York City

SITUATION WANTED

CHEMIST OR SALES ENGINEER

Chemist, college graduate, with 12 years' experience in various lines of rubber manufacturing, including tires, tubes, molded, dipped and blown goods, seeks a position as chemist or plant superintendent. Will also consider a connection in selling or demonstrating capacity where his technical knowledge can be of assistance. Box 470, THE RUBBER AGE.

BUSINESS OPPORTUNITY

MANUFACTURER on West Coast desires to locate maker of Sponge Rubber Chair Cushions with regards to sale of same. Particulars, terms, confidential. Address Box 472, THE RUBBER AGE.

FOR SALE

FOR SALE a quantity of Pulverized Hard Rubber Dust at a reasonable price. Acme Oil Corp., 189 No. Clark St., Chicago, Ill.

2 W. & P. Mixers, 2 Vacuum Shelf Dryers. State condition, price and where can be inspected. Box No. 467, THE RUBBER AGE.

EQUIPMENT WANTED

3 W. & P. Heavy Duty Mixers, one 50-gallon W. & P. Masticator, 12 Vacuum Shelf Dryers. 1 No. 27 Banbury Mixer.
CONSOLIDATED PRODUCTS CO., Inc.
14 Park Row New York City
Barclay 0603

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FACTORY EXECUTIVE

17 years Tires, Tubes and Mechanicals. Thorough knowledge all phases production, costs and sales. Can take complete charge of factory and guarantee results to be forthcoming. Large trade following. Employed, but has excellent reason for desire to change. A-1 references.

Address Box 471
THE RUBBER AGE
250 West 57th St., New York

HARD RUBBER
Executive Seeks Position

A well-known Rubber man will be open for a position after December 31, 1927—at present he is Superintendent of Rubber Division of a nationally known Chicago fountain pen and pencil company.
Have developed tubing machine-made pen and pencil stock in many color combinations. Tubing machine-made stock imitating the grain in wood in lengths or moulded parts.
Experience covers years in all kinds of Hard Rubber goods and Soft Rubber Moulded work.

Address Box 469
THE RUBBER AGE, 250 West 57th St.
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We maintain ONE WAREHOUSE ONLY—All stocks under one roof—no branches. This lowers our overhead.

Rubber Machinery Specialists

Mills
Tubers
Calenders
Washers
Presses
Dryers
etc.

Cameron Slitters; Royle Tubers; Refiners; Calenders; Presses; Vulcanizers; Mills—60, 54, 48, 42 and 36", all makes, with or without motor drives.

Whenever you are in need of good rubber equipment get our list of machinery first. We are sure to have just what you want at the lowest prices.

We also Buy and Sell Surplus Stocks of fabrics, liners, rubber, manufactured rubber products. Let us quote you on your overstocks.

Wire, Phone or Write Your Requirements.

SURPLUS TRADING CORP.
104-110 PARKHURST ST. Terrace Phone: 1848 NEWARK, N. J.

INTERNATIONAL PULP CO., *41 Park Row, New York, N. Y.*
SOLE PRODUCERS OF PURE **ASBESTINE** SPECIALLY PREPARED FOR USE IN RUBBER
Covered and Protected by Letters Patent Registered at U. S. Patent Office, Washington, D. C.
LIBERAL WORKING SAMPLE FURNISHED FREE

LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

DECEMBER 5, 1927

COTTON

THE cotton market has displayed a steadiness over the last fortnight remaining around 19.50 for spot middlings. As ginning operations progress the trade looks for a slightly easier market for the present crop but any small drop can be easily offset by a sudden heavy demand. The last government report gave 12,842,000 bales as the total crop but this figure will probably be increased on the release of the next official estimate.

High, low and closing prices on December 3 were as follows:

	High	Low	Dec. 3 Close	Nov. 17 Close
December	19.62	19.46	19.53	19.32
January	19.62	19.45	19.50	19.37
March	19.81	19.66	19.68	19.58

Tire Fabrics

With the steadier cotton market now prevailing and at a lower price than a month ago, tire fabric prices have also reacted downward. The market has been quiet up to the last few days when interest picked up and a fair amount of business has continued since with every prospect for improvement with the renewal of high production in the tire factories. Latest quotations follow:

CORD				
Peeler, carded, 23/5/3	lb.	.44	@	.45
Peeler, carded, 23/4/3	lb.	.46	@	.47
Peeler, carded, 13/3/3	lb.	.42	@	.43
Peeler, carded, 15/3/3	lb.	.43	@	.43½
Egyptian, carded, 23/5/3	lb.	.54	@	.56
Egyptian, combed, 23/5/3	lb.	.58	@	.60
CHAFERS				
Carded American, 8 oz.	lb.	.39	@	.40
Carded American, 10 oz.	lb.	.43	@	.44
Carded American, 12 oz.	lb.	.41	@	.43
Carded American, 14 oz.	lb.	.40	@	.43
LENO BREAKER				
Carded American, 8¼ oz.	lb.	.42	@	.44
Carded American, 10¼ oz.	lb.	.42	@	.44
SQUARE WOVEN				
Carded American, 17¼ oz. 22-11 ply	lb.	.44	@	.45
Carded American, 17¼ oz. 10-5 ply	lb.	.39	@	.40

Sheetings

Only small commitments have been the feature of the sheeting market, with the mills inclined to hold prices at higher levels than buyers felt justified in view of the easier tone in cotton. An improvement in demand is expected, however, with the present downward tone in price levels. The latest prices are quoted as follows:

40-inch 2.50-yard	yd.	.13	@	.13½
40-inch 2.85-yard	yd.	.11½	@	.11⅝
40-inch 3.15-yard	yd.	.12¼	@	.12⅝
40-inch 3.60-yard	yd.	.10¾	@	.10½
40-inch 3.75-yard	yd.	.09	@	.09¼
40-inch 4.25-yard	yd.	.07⅝	@	.08

Ducks

Prices for ducks have dropped in line with other cotton goods and at the new lower levels ducks have enjoyed a renewed demand but sales have been relatively small, indicating a continuance for the present of hand-to-mouth buying. A more active demand has been evident, however, within the last few days. Latest prices follow:

Belting and Hose	lb.	.35	@	.35½
Enameling	lb.	.35½	@	.39
Shoe Ducks	lb.	.31	@	.35
Single filling	lb.	.15	@	.17½
Double filling	lb.	.18	@	.19

RECLAIMED RUBBER

The market in reclaimed rubber has reacted strongly to the renewed activity in the rubber manufacturing industry and prices have generally advanced all along the line. The position of the market is very strong and the tone under heavy demand is still upward. The outlook for the early part of the coming year is exceptionally promising. Latest price levels are as follows:

High Tensile				
Super-Reclaim No. 1 Black	lb.	.17¾	@	.18
Super-Reclaim No. 2 Black	lb.	.14	@	.14½
High Tensile Red	lb.	.16¼	@	.16½
Shoe				
Unwashed	lb.	.08	@	.08¼
Washed	lb.	.10	@	.10½
Tube				
No. 1 (Floating)	lb.	.17½	@	.18
No. 2 (Compounded)	lb.	.14¼	@	.14½
Tires				
Black, washed		.10	@	.10¼
Black, unwashed		.08¼	@	.08½
Black selected tires	lb.	.08⅝	@	.09
Dark Gray	lb.	.11¼	@	.12
Light Gray	lb.	.13	@	.13½
White	lb.	.15	@	.15½
Truck, Heavy Gravity	lb.	.07¾	@	.08
Truck, Light Gravity	lb.	.08¼	@	.08½
Miscellaneous				
Mechanical Blends	lb.	.07	@	.08
Red	lb.	.14½	@	.15

Scrap Rubber

The scrap rubber market has been active with reclaimers taking good quantities at slightly improved prices, although the price levels have remained unchanged on smaller commitments. Stocks are not plentiful, however, and offerings light but slightly higher prices from dealers are aiding collection. Prices to consumers are as follows:

(Prices to Consumer)

Auto tire peelings	ton	34.00	@	36.00
Standard White auto	ton	57.50	@	60.00
Mixed auto	ton	24.00	@	25.00
Bicycle tires	ton	24.00	@	25.00
Clean solid truck tires	ton	25.00	@	27.00
Boots and shoes	lb.	1.70	@	1.75
Arctics, trimmed	lb.	.01⅝	@	.01½
Arctics, untrimmed	lb.	.01	@	.01¼
Inner tubes, No. 1	lb.	.07⅝	@	.07⅞
Inner tubes, No. 2, compounded		.05¼	@	.05½
Inner tubes, Red	lb.	.06¾	@	.07¼
Air Brake Hose	ton	37.00	@	38.00
Rubber Hose	ton	17.00	@	18.00

CRUDE RUBBER

PRICES on the New York outside crude rubber market have advanced materially during the last two weeks and the list shows a gain of nearly three cents throughout. Factory buying and an active speculative interest on the New York Exchange and in London brought spot up to 41⅛c and daily trading was done between wide fluctuations. The advance was further stimulated by caution on the part of sellers and a decidedly bullish tone over the entire market. Within the last few days a slight reaction has set in but spot is still around 40¼c and with the anticipated increase in production schedules, the market is expected to steady itself around that level. Latest prices on the New York outside market are as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot	.40⅛	@	.40¼
December	.40⅛	@	.40¼
January	.40⅜	@	.40½
January-March	.40⅜	@	.40⅝
First Latex, crepe spot	.40¼	@	.40⅜
Amber Crepe, No. 2 spot	.38⅛	@	.38¼
Amber Crepe, No. 3	.37⅛	@	.37¼
Amber Crepe, No. 4	.37	@	.37⅛
Brown Crepe, Rolled	.33⅜	@	.34
Brown Crepe, Clean, thin	.37⅜	@	.37½
Brown Crepe, Specky	.37⅛	@	.37¼
Liquid Latex, per gal.	1.50	@	1.75
Pontianac—			
Bangermassin	Nominal		
Palembang	Nominal		
Prime Pressed	Nominal		
Sarawak	Nominal		
Paras—			
Up-river Fine	.35½	@	.36
Up-river Medium	.30	@	.32
Up-river Coarse	.26½	@	.27
Acre Bolivian, fine	.35½	@	.36
Tapajos, fine	.42	@	—
Cut Beni Bolivian, fine	.49	@	—
Caucho Ball—			
Upper, shipment	.26	@	.26½
Island, fine	.29	@	.30
Centrals—			
Corinta, scrap	.30	@	—
Esmeralda, sausage	.25	@	.25½
Guayule, washed and dried	.29	@	—
Africans—			
Benguela, No. 2	Nominal		
Congo, upper, black	Nominal		
Congo, upper, red	Nominal		
Balata—			
Block, Colombia	.35½	@	.38
Block, Cuidad	.35	@	.36
Gutta Percha—			
Sink	.24	@	—
Red Macassar	3.00	@	—

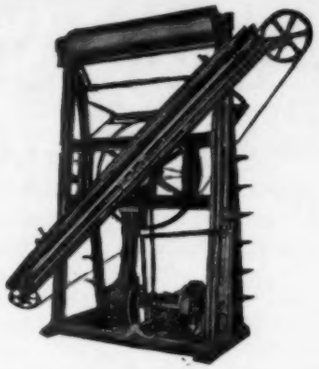
LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot	19½	@	.19⅝d
December	.19½	@	.19⅝d
January	.19⅝	@	.19¾d
January-March	.19¾	@	.19⅞d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	.19⅝	@	.19½d

Recent daily closing prices on the Rubber Exchange of New York are shown on the Financial Page in the News Section of this issue. Daily spot prices of Ribbed Smoked Sheets are given in the Statistical Section.



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WE HAVE PERFECTED many improved devices for our Bias Cutter which simplify its operation, increase its efficiency and promote greater economy in operation.

Cuts cord or flat woven fabrics with equal ease and precision. Cutting range from 1-4 inch strips to 60 inch. Bias blocks on any angle from the horizontal to 45 degrees.

SPADONE MACHINE CO., INC.
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Foreign Representatives: Francis Shaw & Co., Ltd., Bradford, Manchester, Eng.

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THE
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Formerly Jones & Kuhlke

Automobile Tire Molds and Cores

GENERAL MACHINE WORK

Akron, Ohio

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Rand RUBBER GOODS

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Rubber Bibs
Crib Sheets
Bathing Caps
Rubber Specialties
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Made by
RAND RUBBER COMPANY, Inc.
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AKRON-WILLIAMS A-W PRODUCTS

Heater Presses
Molds and Cores
Tubing Machines

THE WILLIAMS FOUNDRY & MACHINE CO.
"In Business Since 1888"
AKRON, OHIO

RUBBER FACTICE OF HIGHEST QUALITY THE STAMFORD FACTICE STAMFORD CONN THE STAMFORD RUBBER SUPPLY CO

Smoothness of the surface of a rubber product is noticeable where Factice is used

The STAMFORD RUBBER SUPPLY COMPANY
STAMFORD, CONN.

"DURO" BRAND

GUAYULE RUBBER

Washed and dry, ready for compounding. Invaluable in conjunction with Plantation Rubbers and Reclaims as an aid in Compounding.
Especially useful in all Friction Stocks.

CONTINENTAL RUBBER CO., OF NEW YORK
1775 BROADWAY NEW YORK CITY

LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

DECEMBER 5, 1927

THE movement in rubber chemicals and compounding materials has been steady during the last fortnight with a marked improvement within the last few days, due to the return to greater production schedules on the part of most of the tire factories. Footwear and mechanical goods plants are working on practically full schedules and are expected to do so for some time to come. As a consequence of the even demand, very few changes have occurred in the price list and these have been noted in the tables below.

Among chemical manufacturers there has been a particularly competitive activity in marketing carbon blacks and a number of new grades have been placed on the market. "Witco" and "Barbour" Black are the latest additions to the blacks recently announced to rubber manufacturers. Accelerators and Anti-oxidants continue to enjoy a good demand but without any announced price changes.

ACCELERATORS

Organic				
A-7	lb.	.70	@	.80
A-11	lb.	.75	@	.90
A-16	lb.	.65	@	.85
A-19	lb.	.75	@	.90
A-20	lb.	.60	@	.75
Aldehyde ammonia, crystals	lb.	.65	@	.70
Aniline oil, drums	lb.	.17	@	.17½
Crylene	lb.	.70	@	—
paste	lb.	.50	@	—
Di-Ortho-Tolyiguanidine	lb.	.85	@	.90
Diphenylguanidine	lb.	.68	@	.72
Ethylidene aniline	lb.	.60	@	.65
Excellerex	lb.	.35	@	.40
Formaldehyde Aniline	lb.	.38	@	.42
Grasselerator 102	lb.	.65	@	.70
Grasselerator 552	lb.	4.45	@	4.60
Grasselerator 808	lb.	1.05	@	1.35
Grasselerator 833	lb.	1.50	@	1.75
Heptene	lb.	.55	@	—
Hexamethylene-tetramine	lb.	.62½	@	.67½
Lithex	lb.	.18	@	.20
Methylenedianilide	lb.	.38	@	.40
Monex	lb.	3.25	@	—
Piperidine-Piperidyldithio-Carbamate	lb.	4.45	@	4.60
Quinoidine	lb.	.40	@	—
R & H 40	lb.	.50	@	.55
R & H 50	lb.	.50	@	.55
Safex	lb.	1.20	@	1.25
Tensilac, No. 39	lb.	.55	@	.60
Tensilac, No. 41	lb.	.65	@	.70
Thermlo F	lb.	.50	@	.55
Thiocarbanilide, kegs	lb.	.26	@	.28½
Thionex	lb.	3.25	@	—
Trimene	lb.	.75	@	—
base	lb.	1.20	@	1.35
Triphenylguanidine	lb.	.65	@	.70
Vulcanex	lb.	.82	@	.86
Vulcone	lb.	.70	@	.74
Vulcanol	lb.	1.05	@	1.08
Z 88	lb.	.75	@	1.80
Inorganic				
Lead, sublimed blue	lb.	.08¼	@	.08¾
Lead, white	lb.	.10½	@	.12½
Litharge, domestic	lb.	.08¾	@	—
Magnesia, calcined, light	lb.	.06	@	.12
heavy	lb.	.04	@	.04½

COLORS

Blacks (See Compounding Materials)				
Blues				
Prussian	lb.	.33	@	.35
Ultramarine	lb.	.08	@	.35
Browns				
Sienna, Italian	lb.	.05	@	.12½
Umber, Turkey	lb.	.04½	@	.06
Greens				
Chrome, light	lb.	.27	@	.31
medium	lb.	.29	@	.32
dark	lb.	.31	@	.34
Chromium Oxide, bbl.	lb.	.35	@	.38
Reds				
Antimony crimson, 15/17	lb.	.40	@	—
sulphur free	lb.	.50	@	.52
golden 15/17 F.S.	lb.	.16	@	.25
Indian English (dom.)	lb.	.08	@	.10
Oxímony	lb.	.12¼	@	—
Para toner	lb.	.13	@	.14
Red oxide, reduced	lb.	.10	@	.11
pure	lb.	.14	@	.15
Venetian red	lb.	.02	@	.06
Vermillion, quicksilver, English	lb.	1.85	@	1.95
Whites				
Lithophone, Akcolith	lb.	.05 3/5	@	.06
Lithophone, Azolith	lb.	.05¼	@	.05¾
Lithopone, Vanolith	lb.	.05¾	@	—
Titanox	lb.	.10	@	.10½
Cal. Base Pigment	lb.	.10	@	.10½
Zinc Oxide—American Process				
American Azo: ZZZ (lead free)	lb.	.06½	@	.07
ZZ (leaded)	lb.	.06⅝	@	.07⅛
Zinc Oxide—French Process				
White seal	lb.	.11⅞	@	—
Green seal	lb.	.10⅞	@	—
Red Seal		.09⅞	@	—
Yellows				
Chrome	lb.	.17	@	.20
Ocher, French medium	lb.	.03½	@	.06
domestic	lb.	.01⅝	@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85	@	24.50
Ammonia carbonate	lb.	.13½	@	.14
Are-O-Sol	ton	8.00	@	11.00
Asbestine	ton	14.75	@	18.00
Barium carbonate	lb.	.02¼	@	.04
Barium Dust	lb.	.05	@	.06
Barytes southern off-color,	ton	12.00	@	18.00
Western prime white	ton	23.00	@	—
imported	ton	27.00	@	36.00
Basofor	lb.	.04½	@	—
Blacks				
Arrow "Aerfloted"	lb.	.09	@	.13
Bone Black	lb.	.05½	@	.11
Carbon, compressed	lb.	.07½	@	.11½
Carbon, uncompressed	lb.	.07	@	.11
Drop Black	lb.	.06	@	.10
Lamp Black	lb.	.12	@	.40
Micronex	lb.	.08	@	.12
Velvetex carbon	lb.	.04	@	.07
Blanc fixe dry f.o.b. works	lb.	.04	@	—
Carrara filler	lb.	.01¾	@	.02
Catalpo (fact.)	lb.	.02	@	—
Chalk	ton	12.00	@	14.00
Clay, China, domestic	ton	8.00	@	9.00
Aerfloted Suprex	ton	9.00	@	20.00
Mineral Flour, c. l. fob mine	ton	20.00	@	23.00
Tensulite		15.00	@	—
Glues, extra white	lb.	.20	@	.29
medium white	lb.	.19	@	.25
common bone	lb.	.14	@	.15
Magnesia, carbonate	lb.	.08½	@	.11
Mica, powdered	ton	90.00	@	100.00
Rotten Stone (powdered)	lb.	.02½	@	.04½
Soapstone, powdered	ton	15.00	@	22.00
Starch, powdered	cwt.	3.30	@	3.70
Talc, domestic	ton	16.00	@	18.00
Velvetex	lb.	.04	@	.07
Whiting, commercial	cwt.	.85	@	1.00
English cliffstone	cwt.	1.50	@	—
Superfine	ton	10.00	@	12.00
Vansalite	ton	12.00	@	—
Wood pulp XXX	ton	45.00	@	—
Wood pulp X	ton	25.00	@	—
Zinc Carbonate	lb.	.10	@	.12

MINERAL RUBBER

Genasco (factory)	ton	50.00	@	52.00
Montezuma, solid	ton	28.00	@	36.00
Montezuma, granulated	ton	32.00	@	42.00
Paradura	ton	62.50	@	65.00
Pioneer, MR, solid	ton	41.00	@	43.00
Pioneer—granulated	ton	51.00	@	53.00
Robertson, MR, solid	ton	34.00	@	80.00
M.R. (gran)	ton	34.00	@	80.00

SOFTENERS

Acids				
Nitric, 36 degrees	cwt.	5.00	@	5.25
Sulphuric, 60 degrees	ton	10.50	@	11.50
66 degrees	ton	15.00	@	16.00
Tartaric, crystals	lb.	.31½	@	—
Acids, Fatty				
Stearex	lb.	.10	@	.14
Stearic, single pressed	lb.	.10	@	.11
Double pressed	lb.	.11½	@	.12
triple pressed	lb.	.13½	@	.14
Alkalies				
Caustic soda, 76%	cwt.	3.76	@	3.91
Soda ash, 58% C.L.	cwt.	1.42½	@	1.45
Oils				
Castor, No. 3 bbls.	lb.	.12	@	.13
Corn, crude, bbls.	lb.	.09¾	@	.10
refined	lb.	.11	@	—
Cottonseed, crude		.08	@	—
Cycline	gal.	.27	@	.34
Dispersol A (light)	lb.	.15	@	.16
Dispersol B (dark)	lb.	.14	@	.15
Fluxrite	lb.	.05	@	.06
Glycerine, C.P. drums	lb.	.26	@	.26½
Linseed, Raw C.L. bbl.	lb.	.10½	@	.11½
Palm Lagos	lb.	.07¼	@	.07½
Niger	lb.	.07¾	@	.08
Vansulol	lb.	.10½	@	—
Para-Flux	gal.	.17	@	—
Peanut, domestic, crude	lb.	.11	@	—
Petrolatum, white	lb.	08⅞	@	.09
amber	lb.	.03¾	@	.04
dark amber	lb.	.03⅜	@	.03½
Pine, steam distilled	lb.	.67	@	.69
Rapeseed, refined	gal.	.82	@	.83
Rosin, first rectified	gal.	.55	@	—
second rectified	gal.	.58	@	—
Resins and Pitches				
Pitch, Burgundy	lb.	.06½	@	.07½
coal tar	gal.	.05½	@	.06
pine, 200 lb. gr. wt.	bbl.	9.00	@	10.00
Resin, grade K, 280 lb.	bbl.	9.35	@	—
Pigmentar	gal.	.33	@	.41
Tar Retort, 50 gal.	bbl.	13.00	@	14.00
Solvents				
Acetone, pure	lb.	.14½	@	—
Alcohol denatured, No. 1 bbls.	gal.	.37½	@	.44½
Benzol, 90%	gal.	.28	@	—
pure		.29	@	—
Carbon bisulphide	lb.	.05½	@	.06½
Carbon tetrachloride		.06¾	@	.07½
Motor gasoline, steel bbls.	gal.	.17	@	—
Naptha, V. M. & P.	gal.	.14	@	—
Turpentine, spirits	gal.	.54	@	.55
wood	gal.	.42	@	—
Waxes				
Beeswax	lb.	.58	@	.60
Carnauba	lb.	.40	@	.50
Ceresin, white	lb.	.13	@	.14
Montan, crude	lb.	.07	@	.07½
Ozokerite, black	lb.	.30	@	—
green	lb.	.26	@	.30
Miscellaneous				
RSL Mold Solution	gal.	.75	@	.100

ANTI-OXIDANTS

Antox	lb.	.79	@	.83
Neozone	lb.	.74	@	—
Stabilite	lb.	.65	@	—
VGB	lb.	.55	@	.66

SUBSTITUTES

Black	lb.	.08	@	.14
White	lb.	.10	@	.16
Brown	lb.	.10	@	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03½	@	.06
Sulphur flour,				
Superfine bags	cwt.	2.20	@	2.80
Superfine, bbls.	cwt.	2.55	@	3.10
100% pure, refined, bags	cwt.	2.60	@	3.15
bbls.	cwt.	2.95	@	3.50

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

ACTIVITY in the rubber manufacturing industry is much more marked at the moment than a fortnight ago. Tire manufacturers are reporting that spring dating orders have exceeded all estimates and with Ford again in production, the tire industry is rapidly coming back to capacity producing schedules. Rubber consumption figures for November are not yet available but it is thought that the month will show a slight increase over the October absorption. November arrivals of crude rubber have been surprisingly heavy in the face of already accumulated stocks and will probably total nearly 38,000 tons. Unless re-exports for the month have been unusually high this will bring the total amount of stocks on hand in the United States to another peak record. However, the rubber trade apparently sees no cause for anxiety in the stock situation, as evidenced by the rising price levels for spot and future deliveries on both the New York and London exchanges and the active buying interest from factories which has characterized the trading during the last two weeks.

The quarterly figures of the Rubber Association of America were made available during the fortnight and are reported elsewhere in this issue. The figures presented no surprises to the trade other than a drop in production of reclaimed rubber, which was unexpected in the light of previous reports that all reclaiming plants were working at capacity.

Late figures covering the exports of crude rubber from the principal producing centers and the net imports of crude rubber into the chief manufacturing markets have been added to the following tables.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1925:							
Jan.	32,898	22,406,756	30.41	1,162	963,593	37.02	31,736
Feb.	24,696	18,532,115	33.50	979	779,406	35.53	23,717
Mar.	33,072	25,146,691	33.94	1,345	1,105,119	36.69	31,727
Apr.	32,506	24,874,562	34.16	1,130	1,009,305	39.86	31,376
May	36,932	30,311,754	36.64	1,203	1,323,445	49.12	35,729
June	31,569	26,855,883	37.98	1,198	1,577,106	58.75	30,371
July	32,455	33,701,723	46.36	1,278	2,132,681	74.52	31,177
Aug.	33,412	39,834,348	53.22	1,131	1,623,258	64.08	32,281
Sept.	26,367	36,686,013	62.11	1,154	1,820,360	70.41	25,213
Oct	34,651	50,027,338	64.45	1,132	1,989,291	78.43	33,519
Nov.	37,755	56,271,963	66.54	1,605	2,898,930	80.65	36,150
Dec.	40,329	65,055,868	72.02	1,510	2,625,259	77.61	38,819
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,234	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,316,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,734	42.22	41,814
Feb.	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887
Mar.	35,514	28,693,026	36.07	2,763	3,249,665	52.50	32,751
Apr.	46,202	37,284,806	36.15	1,575	1,428,425	40.45	44,627
May	36,543	30,998,657	37.87	2,782	2,501,562	41.74	33,761
June	33,045	27,333,770	36.28	1,775	1,550,592	38.99	31,270
July	37,678	31,678,259	37.53	1,958	1,560,853	35.58	35,720
Aug.	32,810	26,396,904	36.59	1,809	1,382,768	34.49	31,001
Sept.	33,301	23,852,857	33.73	3,500	3,036,929	34.91	29,801
Oct.	30,184	22,163,044	32.77	2,513	2,042,713	36.29	27,671

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

	Figures on Monthly Basis						
	1921	1922	1923	1924	1925	1926	1927
January	5,045	16,938	30,106	29,058	29,638	32,196	31,518
February	5,955	14,767	30,149	25,736	29,761	31,136	30,137
March	9,190	21,408	36,629	28,385	33,498	32,936	36,141
April	13,084	19,294	29,085	27,129	34,139	32,696	35,871
May	16,023	23,246	36,155	25,845	35,322	29,364	34,592
June	16,142	31,713	24,272	22,753	35,822	28,598	33,801
July	18,310	24,522	17,685	23,396	36,053	27,577	29,219
August	23,649	29,361	20,359	28,982	35,909	34,533	33,460
September	16,705	24,410	17,594	31,497	31,691	32,904	27,214
October	16,814	26,881	21,321	31,520	29,047	29,836	26,790
November	14,105	24,950	20,437	27,289	28,853	28,080	
December	15,482	25,070	21,902	27,199	28,748	26,293	
Totals	170,504	282,560	305,694	328,769	388,481	366,149	

	Figures on Quarterly Basis						
Quarter	1921	1922	1923	1924	1925	1926	1927
Jan./Mar.			96,776	87,609	95,265	94,301	99,216
Apr./June	65,463	127,360	89,493	75,674	104,099	87,109	103,242
July/Sept.			55,621	83,813	99,493	93,793	89,892
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	
Totals	171,425	282,427	305,507	339,752	384,644	358,415	

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
September 24	4,497	839	1,391	181	6,908
October 1	3,911	904	1,628	556	6,999
October 8	4,629	754	1,621	115	7,119
October 15	4,573	861	1,170	1,596	8,200
October 22	4,514	690	1,833	922	7,959
October 29	2,903	858	1,208	810	5,779
November 5	4,902	611	2,850	938	9,301
November 12	2,956	631	1,598	1,032	6,218
November 19	4,579	651	1,051	451	6,732
November 26	4,014	779	1,588	1,945	8,326

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1925																																
January	—	29⅞	29⅝	—	39	39	39¼	38⅛	35⅝	35⅞	—	37⅞	36½	36⅝	35	35⅝	35⅝	—	34⅞	34⅝	35	35⅞	36¼	36¼	35⅞	35½	35½	35½	35⅛	35⅛	35⅛	36⅜
February	—	26⅝	34⅜	—	34½	34½	35⅝	—	35⅝	35⅞	35¼	36⅝	35⅜	36	—	36⅞	36⅝	36⅜	36¾	36⅜	36⅜	—	—	36⅛	36⅛	37⅛	37⅛	37⅛	36⅝	—	—	36⅜
March	—	38⅝	38⅝	—	38⅞	39⅞	39⅞	—	39⅝	40⅜	40¾	39⅝	40⅜	40⅛	—	40⅝	40½	—	41¾	41⅜	41½	—	—	42⅛	42⅜	43⅜	43⅜	43⅜	—	—	—	43¾	41
April	—	41¼	41⅜	—	41⅞	42⅜	42⅜	—	43⅜	—	—	44⅜	44⅜	44⅜	—	44⅜	44⅜	44⅜	44⅛	43⅞	43⅞	43⅞	43⅞	43⅞	43⅞	44⅜	44⅜	44⅜	45⅜	45⅜	45⅜	43⅜
May	—	45	45⅜	—	47⅛	46⅞	46⅝	50⅜	52⅜	—	59	—	—	59¼	—	60⅜	63	—	63	61⅝	60⅜	—	—	63⅛	63⅛	65	63¾	66⅜	69⅞	69⅞	—	68½
June	—	69½	72	—	74⅜	75⅜	75¾	—	74⅜	74⅜	75¼	76⅜	74⅜	73⅞	—	71⅜	71⅜	—	75⅛	76¼	—	—	—	83⅛	83⅛	85⅜	85⅜	82⅝	85⅞	85⅞	—	77¼
July	—	81⅞	81⅞	—	85⅜	88⅝	88⅝	—	90½	95⅛	99⅞	106⅛	105⅜	110⅞	—	110⅞	117	—	121	119	117⅛	117⅝	112⅜	112⅛	112¼	107⅝	96⅜	93⅜	89⅜	93⅜	—	103⅜
August	—	94⅛	95⅛	—	86⅜	86⅜	86⅜	81¾	79	78⅜	72½	76½	81½	80⅜	77⅜	—	78⅜	80½	82½	82½	82½	82½	82½	82½	82½	85⅛	85¼	87⅛	89⅜	90	—	83
September	—	85⅛	87⅛	—	85	81⅝	81⅝	81¾	83	80½	86½	92½	—	92⅝	93⅜	—	93⅜	92⅝	94¾	99	101¼	102	92	89	89	98	89	89⅜	91⅛	91⅛	—	88⅝
October	—	91¼	92	—	91¼	94⅞	97	97½	99	101	—	97	95½	97	97	99¼	99	107	109¾	110¾	110½	102	99¼	99¼	99¼	98	—	99½	99¾	101½	100¼	98
November	—	99¼	—	—	98⅜	98⅜	100	100¾	—	98¾	99½	100¾	101¾	104½	105½	—	109	107	109¾	110¾	110½	110½	110⅝	110⅝	109	106¼	—	108¾	108¾	—	104¾	104⅜
December	—	106⅜	108½	107⅜	107¼	108⅝	—	108	109	109⅜	106	105½	105⅞	—	101	—	99¼	90¼	86¾	—	88¼	90¼	88⅝	88⅝	88⅝	—	—	91	93	91¾	91¼	98½
1926																																
January	—	67	—	87	87	85½	86½	87½	87⅜	—	85½	88¼	88¼	85½	84½	82½	—	75½	75½	75½	75	72	72½	68	68	66½	67	69¼	70⅝	69	—	79½
February	—	67½	66¼	66¾	68	69	—	—	69	66	66	66	65½	63	62	60½	60½	75½	59	61	60	—	56	60	62	51¾	51	60	59½	58½	58	62¼
March	—	55	58	—	53	53½	57½	—	56	61	60	63	61½	62	63	60½	62	61	61	61½	61	—	61½	60	60	59½	60	59½	59½	58½	58	59
April	—	48½	—	—	59	59	56	56½	56½	56½	53	51½	50½	49¾	47½	48½	47	47	47½	48½	48	47¼	47½	48	48	48	48	48	48	48	48	48
May	—	41½	42	—	50¼	49¾	49¾	49½	49	—	49½	49	47½	47¾	47½	47½	47	47	47	47¼	46¼	44	43½	43½	45	45	45	45	45	45	45	45
June	—	42	42	—	42	41½	41½	41½	42	43	42	41½	42	42	43	43	43	43	43	43	43	41½	41½	41½	41½	41½	41½	41½	41½	42	42	42½
July	—	42	42	—	42	41½	41½	41½	41½	42	43	41½	41½	41½	40	40	40	40	40	40	40	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½	41½
August	—	38⅝	38½	—	37	37	38¼	39	38¾	—	40¼	37½	37½	38¼	38¼	38	38¼	38¼	39	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½	39½
September	—	40¼	40¼	—	—	—	—	42¾	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½
October	—	43	—	—	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼
November	—	41¼	—	—	41	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼
December	—	36⅞	37½	—	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½
1927																																
January	—	—	—	—	89½	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
February	—	87⅞	87⅞	—	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½	87½
March	—	89⅜	89⅜	—	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼
April	—	41½	40	—	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
May	—	—	—	—	40¾	40½	40½	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
June	—	40⅝	40¼	—	40¼	40¼	40¼	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½	40½
July	—	85½	—	—	85¼	85½	85½	84¾	84½	84¾	84¾	84¾	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½	84½
August	—	85¼	85¼	—	85¼	85½	85½	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾	85¾
Sept.	—	34	33¾	—	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33½	33½	33½	33¾	33¾	33¾	33¾	33¾	33¾	33¾
Oct.	—	33⅝	33⅝	—	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝	33⅝
Nov.	—	35	35¼	—	35¼	35¾	35⅞	—	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼	36¼
Dec.	—	40½	40⅞	—	40⅞	40⅞	40⅞	—	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞	40⅞

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	
May	15.25	27.39	18.89	58.47	47.75	40.76	
June	15.11	26.88	18.81	77.26	42.50	37.25	
July	14.67	26.10	22.16	103.16	41.03	34.44	
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	
Oct.	19.78	26.93	31.13	98.01	42.56	34.32	
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	
Dec.	27.42	26.60	37.88	98.51	38.25		
Average for Year	17.50	29.45	26.20	72.46	48.50		

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Sixth Restriction Year—First Quarter

Day	Nov.	Dec.	Jan.	Day	Nov.	Dec.	Jan.
1	16⅞	19⅝	—	17	17⅜	—	—
2	16⅞	19½	—	18	18⅛	—	—
3	17	19½	—	19	18¼	—	—
4	17¼	—	—	20	—	—	—
5	17½	—	—	21	18⅛	—	—
6	—	—	—	22	18½	—	—
7	17½	—	—	23	18⅞	—	—
8	17½	—	—	24	19⅜	—	—
9	17⅝	—	—	25	19½	—	—
10	17⅝	—	—	26	19⅞	—	—
11	17½	—	—	27	—	—	—
12	17½	—	—	28	20	—	—
13	—	—	—	29	19⅞	—	—
14	17⅝	—	—	30	19½	—	—
15	17⅝	—	—	31	—	—	—
16	17⅞	—	—				

(The average price for the period for which daily prices are reported above is approximately 18.316 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27
November-January	14.285	14.175	17.9983	46.709	19.265
February-April	16.858	12.917	19.356	28.103	19.696
May-July	**14.242**	**10.947**	**38.469**	**21.001**	**18.165**
August-October	14.944	14.632	43.269	20.199	16.620

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Nov. Cents	Dec. Cents	Day of Month	Nov. Cents	Dec. Cents	Day of Month	Nov. Cents	Dec. Cents
1	20.75	19.65	11	20.25	——	21	20.30	——
2	21.30	19.85	12	20.30	——	22	20.00	——
3	21.15	19.95	13	——	——	23	19.90	——
4	21.20	——	14	20.05	——	24	——	——
5	21.25	——	15	20.20	——	25	19.90	——
6	——	——	16	20.10	——	26	19.75	——
7	21.25	——	17	19.75	——	27	——	——
8	——	——	18	19.80	——	28	19.30	——
9	20.25	——	19	19.80	——	29	19.40	——
10	19.85	——	20	——	——	30	19.50	——
						31	——	——

Average Monthly Price Per Pound

Month	1925 Cents	1926 Cents	1927 Cents	Month	1925 Cents	1926 Cents	1927 Cents
Jan.	23.99	20.85	13.42	Aug.	23.72	18.57	20.04
Feb.	24.70	20.60	14.10	Sept.	23.79	17.02	21.95
Mar.	25.64	19.35	14.32	Oct.	21.77	13.14	20.55
Apr.	24.54	19.13	14.75	Nov.	20.94	12.86	20.22
May	23.41	18.92	16.07	Dec.	20.06	12.68	
June	24.13	18.57	16.85	Average			
July	24.68	18.71	18.00	for Year	23.45	17.53	

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	60,870	55,198	76,172	36,759	46,296	45,312	97,629	100,434	121,484
Feb.	54,109	58,035	91,186	41,475	46,935	42,166	95,584	104,970	133,352
March	52,494	61,822	85,740	40,577	43,567	49,600	93,071	105,389	135,340
April	50,143	55,261	92,757	53,465	41,905	38,963	103,608	97,166	131,720
May	52,064	64,360	94,563	46,846	40,303	44,181	98,910	104,663	138,744
June	50,997	60,460	89,250	51,202	40,907	47,233	102,199	101,367	136,483
July	46,245	64,900	98,469	46,003	38,062	40,587	92,248	102,962	139,056
Aug.	42,354	60,870	96,148	41,254	37,360	40,937	83,608	98,230	137,085
Sept.	36,367	62,078	97,829	55,151	42,464	37,966	91,518	105,542	135,793
Oct.	34,085	64,089	97,452	51,098	52,930	42,804	85,183	117,919	140,256
Nov.	34,885	69,385		42,692	47,311		86,577	116,696	
Dec.	51,215	72,520		48,208	52,020		99,423	124,540	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1920	1921	1922	1923	1924	1925	1926
January	19,300	56,573	67,252	73,498	57,460	27,172	9,994
February	18,329	59,439	67,623	70,483	56,732	23,425	10,005
March	18,969	63,913	66,670	68,438	55,647	18,104	13,750
April	20,072	68,759	68,637	58,770	54,559	12,949	18,951
May	20,921	70,403	70,146	54,439	51,615	5,895	20,896
June	22,517	69,408	71,597	51,050	51,115	5,318	23,894
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727
August	30,674	73,211	72,112	48,427	49,700	4,619	30,764
September	35,504	72,175	70,977	54,523	44,011	5,453	35,077
October	41,743	69,229	68,536	58,891	37,523	5,086	42,141
November	45,550	70,786	68,548	60,074	33,593	3,869	44,057
December	50,652	69,792	72,299	60,246	29,488	5,697	48,921

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1927					
January	48,948	50,756	52,484	53,662	54,786
February	55,740	56,939	56,962	58,659	—
March	59,945	61,516	61,300	62,167	—
April	62,634	63,861	65,033	65,511	67,034
May	68,187	68,041	66,668	67,054	—
June	67,105	67,454	66,894	64,486	—
July	63,917	64,163	63,511	62,819	63,626
August	64,177	64,557	64,842	64,259	—
September	65,162	66,148	66,664	67,253	—
October	68,519	70,167	70,916	70,060	69,551
November	69,660	69,501	69,850	67,318	—

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1925	1926	1927	End of	1925	1926	1927
Jan.	15,925	16,726	25,440	July	15,894	23,101	22,558
Feb.	17,320	13,653	26,766	Aug.	17,251	23,362	25,764
Mar.	17,261	18,389	27,844	Sept.	16,526	25,997	25,178
Apr.	15,368	16,328	24,543	Oct.	15,346	26,614	25,790
May	15,804	16,967	25,133	Nov.	19,788	25,486	
June	15,884	19,416	21,898	Dec.	18,840	26,443	

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1925	26,001,664	66.8
1924	21,863,311	19.7	1926	24,199,524	78.8
1927			1927		
January	1,489,078	77.0	July	1,679,587	84.4
February	1,753,224	84.4	August	1,825,905	80.2
March	2,071,989	85.1	September	1,727,122	77.7
April	2,060,868	88.0	October	1,354,924	81.4
May	2,169,208	86.9	November		
June	1,871,538	77.0	December		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1926	1927
January	11,918,000	14,386,000	17,582,000	17,888,000
February	9,626,000	13,210,000	15,814,000	18,240,000
March	10,961,000	14,890,000	19,302,000	22,464,000
April	14,583,000	19,013,000	20,848,000	23,371,000
May	15,889,000	20,459,000	24,213,000	26,579,000
June	16,421,000	20,724,000	23,803,000	27,799,000
July	18,610,000	22,879,000	24,752,000	29,784,000
August	19,825,000	22,323,000	26,912,000	29,779,000
September	16,871,000	20,177,000	22,929,000	28,409,000
October	18,029,000	19,826,000	23,973,000	25,497,000
November	16,607,000	18,024,000	20,618,000	
December	15,663,000	17,954,000	21,419,000	
TOTAL	185,003,000	223,865,000	262,165,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	40,932	45,259	51,633	60,845	61,237
Shipments	39,987	45,204	50,120	59,262	59,002
Inventory[2]	6,132	5,772	7,427	8,142	10,456

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	4,740	4,587	4,965	4,013	2,974	4,932	7,949	9,947	10,432
Feb.	4,908	4,865	5,095	3,924	3,436	4,458	8,928	11,164	11,075
Mar.	5,276	5,456	6,276	4,657	4,561	5,701	9,510	12,004	11,583
Apr.	5,341	5,346	6,299	5,498	4,980	5,701	9,088	12,461	12,122
May	5,467	5,023	6,151	5,954	5,211	5,657	8,611	12,343	12,462
June	5,418	5,422	6,202	6,737	5,724	6,253	7,243	11,968	12,462
July	5,587	4,950	5,087	6,298	6,337	5,973	6,421	10,592	11,326
Aug.	5,607	5,872	5,752	4,760	6,744	6,393	7,261	9,732	10,721
Sept.	5,007	5,706	4,822	4,569	6,040	5,717	7,681	9,318	9,722
Oct.	4,505	5,103		5,580	4,544		6,670	9,917	
Nov.	4,229	4,324		3,671	3,733		6,955	10,297	
Dec.	4,760	4,683		3,601	4,718		8,142	10,456	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926
Production	50,850	60,116	70,706	82,614	76,618
Shipments	49,673	59,072	68,016	81,004	71,591
Inventory[2]	7,643	8,425	11,052	11,313	16,200

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	6,343	6,809	5,337	5,576	3,723	6,016	11,570	14,361	15,585
Feb.	6,339	6,825	5,658	4,971	3,736	5,120	13,023	17,090	16,075
Mar.	7,000	7,030	7,184	5,711	4,987	6,157	14,236	19,131	17,096
Apr.	6,851	6,554	7,378	6,704	5,051	6,359	13,618	20,674	17,801
May	6,846	6,149	6,737	8,040	6,304	6,140	12,501	21,141	18,389
June	6,942	6,171	6,306	9,032	6,898	6,832	10,409	20,243	17,858
July	7,544	5,729	5,284	9,140	8,569	7,070	8,635	17,267	16,004
Aug.	7,618	7,424	6,480	6,923	9,579	7,983	9,271	15,462	14,664
Sept.	7,254	7,590	5,651	6,665	7,762	6,758	9,950	15,312	13,511
Oct.	6,612	6,208		7,845	5,474		8,726	15,929	
Nov.	6,266	4,852		5,406	4,045		9,491	16,604	
Dec.	6,999	5,277		4,991	5,463		11,313	16,200	

(1) Rubber Association of Amreica figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	Passenger Cars			Trucks		
	Total	United States	Canada	Total	United States	Canada
1920	1,883,158	1,799,522	83,636	322,039	311,531	10,508
1921	1,514,000	1,452,902	61,098	147,550	142,402	5,148
1922	2,397,827	2,302,923	94,904	251,434	244,285	7,149
1923	3,719,164	3,589,936	129,228	378,288	361,078	17,210
1924	3,262,764	3,144,999	117,765	378,106	360,625	17,481
1925	3,817,639	3,678,328	139,311	498,019	475,941	22,078
1926						
January	284,703	272,922	11,781	33,461	29,763	3,698
February	334,524	319,763	14,761	41,685	37,608	4,077
March	399,105	381,116	17,989	49,233	44,848	4,385
April	401,836	383,907	17,929	53,887	50,314	3,573
May	394,569	373,140	21,429	51,343	47,838	3,505
June	358,360	339,542	18,818	47,043	44,110	2,933
July	328,816	315,863	12,953	41,847	39,592	2,255
August	393,040	380,258	12,782	47,907	45,404	2,503
September	363,537	350,913	12,624	51,299	46,428	4,871
October	300,142	289,547	10,595	46,965	42,890	4,075
November	226,278	219,504	6,774	39,410	36,356	3,054
December	143,413	137,361	6,052	30,002	28,302	1,700
TOTAL	3,928,323	3,766,336	161,487	534,082	493,453	40,629
1927						
January	208,718	196,973	11,745	40,874	37,243	3,631
February	275,458	260,632	14,826	41,947	38,118	3,829
March	360,754	341,665	19,089	48,590	45,056	3,534
April	373,961	353,071	20,890	48,216	44,495	3,721
May	374,259	352,268	21,991	47,890	44,173	3,717
June	290,188	273,718	16,470	43,003	40,265	2,738
July	242,144	233,425	8,719	32,249	29,981	2,268
August	281,464	271,325	10,139	34,552	31,715	2,837
September	233,694	225,013	8,681	35,145	32,564	2,581
October	191,942	185,706	6,236	37,141	35,586	1,555
November						
December						

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA[1]								DUTCH EAST INDIES[2]						
	Gross Exports	Gross Exports Minus Imports	Imports	Ceylon[3]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley[6]	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926:															
Jan.	30,452	10,237	20,215	4,246	1,278	416	472	289	4,110	6,239	8,165	866	1,284	1,805	49,380
Feb.	30,440	8,306	22,134	5,120	725	488	450	253	4,524	5,717	6,854	554	2,759	1,978	51,556
Mar.	35,012	14,800	20,212	5,177	1,113	792	561	418	4,527	5,566	11,984	573	2,126	1,899	54,948
Apr.	23,727	10,565	13,162	3,766	590	679	374	293	4,226	4,598	6,285	410	2,318	1,529	38,230
May	31,231	10,604	20,627	3,944	691	927	410	279	4,440	5,358	8,787	502	1,353	1,464	48,732
June	30,624	11,764	18,860	4,208	452	779	512	275	4,444	6,125	10,614	549	1,213	1,279	49,310
July	28,824	15,280	13,544	4,422	938	911	498	439	4,618	5,612	13,112	1,521	1,565	1,148	48,328
Aug.	34,625	13,595	21,030	5,666	521	890	476	316	4,132	5,699	10,390	378	1,888	1,097	52,483
Sept.	35,913	13,972	21,941	6,015	651	888	689	457	4,065	6,568	11,391	681	2,156	822	56,324
Oct.	39,367	15,203	24,164	5,672	634	805	473	385	4,058	6,998	11,491	661	1,904	1,023	58,268
Nov.	34,302	12,201	22,101	4,228	1,110	685	547	285	3,988	5,816	9,422	718	1,911	1,259	52,070
Dec.	36,811	14,716	22,095	6,498	1,176	895	617	338	5,054	7,117	12,786	790	3,821	714	61,901
	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,184	6,705	10,541	941	2,885	981	55,654
Feb.	27,528	11,607	15,921	3,571	1,469	552	445	360	4,707	6,526	10,634	675	2,082	1,098	48,040
Mar.	41,346	17,464	23,882	7,142	1,124	997	639	432	5,657	7,003	12,490	733	3,203	1,791	65,093
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,666	5,530	10,035	557	2,374	1,495	46,663
May	31,393	15,491	15,902	3,124	760	786	415	348	5,480	5,528	14,029	586	2,431	1,207	50,616
June	32,607	14,706	17,901	3,348	856	1,100	539	409	4,818	5,519	9,402	772	1,030	1,706	47,400
July	23,947	12,697	11,250	4,018	827	859	500*	333	4,771	6,140	11,663	519	1,713	1,115	*43,708
Aug.	30,371	17,105	13,266	5,357	688	1,133	500*	546	4,355	6,683	12,054	716	2,004	969	*48,271
Sept.	29,835	12,095	17,740	4,911	479	645	500*	498	3,685	6,052	10,059	497	2,474	1,000*	*48,490
Oct.	29,846	15,801	14,045	5,245		721	500*	452				775	2,704		
Nov.															
Dec.															

(1) Mayalan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Italy, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States[a]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,643
1926:															
January	40,345	6,886	2,832	703	2,188	892	760	332	436	76	163	303	89	134	56,141
February	31,435	3,114	3,063	1,113	1,865	741	1,041	643	512	143	88	397	145	75	44,375
March	40,316	8,907	3,941	1,342	2,079	864	1,037	832	547	129	227	377	109	161	60,868
April	33,416	8,275	4,121	1,781	1,615	1,868	865	402	505	71	93	335	130	193	53,670
May	28,705	6,773	2,519	1,848	1,239	1,010	705	200	468	186	241	225	60	192	44,371
June	23,795	5,894	2,196	1,655	1,188	1,465	1,070	983	636	269	215	303	123	103	39,895
July	34,266	6,768	2,352	2,202	1,552	1,447	800	132	702	295	480	292	121	115	51,524
August	26,081	7,327	2,457	2,110	1,888	1,284	796	655	1,275	303	594	336	90	151	45,847
September	35,675	8,843	1,774	2,029	1,355	1,922	819	472	1,241	283	429	317	91	138	55,388
October	28,110	8,082	3,376	2,423	1,865	2,396	645	585	1,004	361	2	360	100	121	49,370
November	37,673	9,247	2,719	3,007	1,548	3,380	832	568	916	194	-18	358	90	181	60,695
December	35,850	4,749	2,890	2,562	1,847	856	439	725	777	243	156	443	151	806	51,999
1927:															
January	41,815	10,192	3,284	2,481	1,936	1,227	672	803	929	296	181	316	139	100	64,371
February	25,886	7,692	3,263	3,103	2,620	1,902	601	907	460	502	153	336	146	210	47,781
March	32,752	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,026
April	44,627	7,875	2,310	2,393	1,509	2,181	781	1,972	762	448	58	230	177	218	65,541
May	33,761	2,896	2,006	3,380	2,519	1,084	918	887	694	633	-57	335	155	223	49,454
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	575	-16	243	164	183	46,609
July	35,720	1,116	2,384	2,946	2,104	1,505	1,007	415	900	436	66	227	177	236	49,239
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	-63	312	138	123	47,785
September	28,704	7,800	1,956	2,891	1,850	2,025	684	518	750	552	-32	451	155	272	48,576
October	27,671	5,888		4,202	1,790	1,966		1,075			156				
November															
December															

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—United Kingdom exports to Russia, and beginning with October, 1927, exports from the United States to Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation: such imports amounted to 4,305 tons in 1926 and averaged about 400 tons monthly during the first ten months of 1927.

BOOK REVIEWS

FIFTEENTH ANNUAL REPORT OF THE SECRETARY OF COMMERCE. For the fiscal year ended June 30, 1927. United States Government Printing Office, Washington, D. C. 310 pages. 30 cents.

The chief item of interest to the rubber trade contained in the latest annual report of Secretary Hoover is the review of the year's activities of the Rubber Division of the Bureau of Foreign and Domestic Commerce. The Department of Commerce can justly point with pride to the excellent services which the Rubber Division is rendering to the rubber trade and other commercial agencies engaged in the merchandising of rubber manufactured goods both here and abroad. These services have expanded yearly until practically every form of information desired by the trade is furnished in a timely and thorough manner.

The volume of the work accomplished by the Rubber Division during the year 1926-1927 increased 35 per cent over the preceding year. Three additional news services were instituted during the year, one weekly and two monthly, serving, respectively, the exporters of tires, mechanical rubber goods and rubber footwear. The series of manuals covering the salient facts affecting the importation of rubber goods into foreign markets was added to during the year by the issuance of the manual on mechanical rubber goods which covered the subject in 100 different export markets. Since the end of the fiscal year the manual on druggists' rubber sundries and specialties has also been completed and released.

Another regular service established during the year is the dissemination of cabled reports on weekly movements of crude rubber from the principal foreign trade centers. The tire dealers' survey, taken semi-annually is being continued and broadened to detail further data as an aid to manufacturers in fixing production schedules.

RUBBER PRODUCING COMPANIES, 1927. Compiled by the Mincing Lane Tea and Rubber Share Brokers' Association, London. 7s. 6d net.

The latest edition of this annual publication is the most complete volume so far published and is a most valuable contribution to the standard books of reference on the rubber producing industry. The information is comprehensively set forth in considerable detail and covers data on practically every British rubber company. The particulars listed include the directorate of the company, estate manager, capital, acreage, tenure, when planted and the area in bearing, purchase price, crop yields, net price per pound for the last seven years, investments, forward sales and all recent re-organizations, etc. The edition runs over 700 pages.

THE PAN-AMERICAN CONFEDERATION FOR HIGHWAY EDUCATION, Its Aims and Purposes. Constitution and By-Laws, Issued by The Pan-American Confederation for Highway Education, Washington, D. C. 1927. 35 pages.

This small volume is of interest to the rubber trade chiefly because of the tour made this year by the delegates forming the Third Pan-American Highway Commission, during which they were guests of the rubber industry while in Akron. Many of the delegates had been designated by their governments as official representatives to the Third Pan-American Commercial Conference, held in Washington, D. C., early in the year under the auspices of the Pan-American Union, and took this opportunity to make a survey of the United States highway conditions. Aside from the extensive trips by highways, several long railroad journeys were made. Port facilities at coast cities were inspected as well as the steel, brass, electrical, food and packing industries.

The importance of these tours was recognized by the Government of the United States, which sent official observers from the Departments of State, Agriculture and Commerce.

As a result, reports indicate that the delegates returned to their respective governments intent upon a greater expansion of highway transportation consistent with sound financial and engineering considerations.

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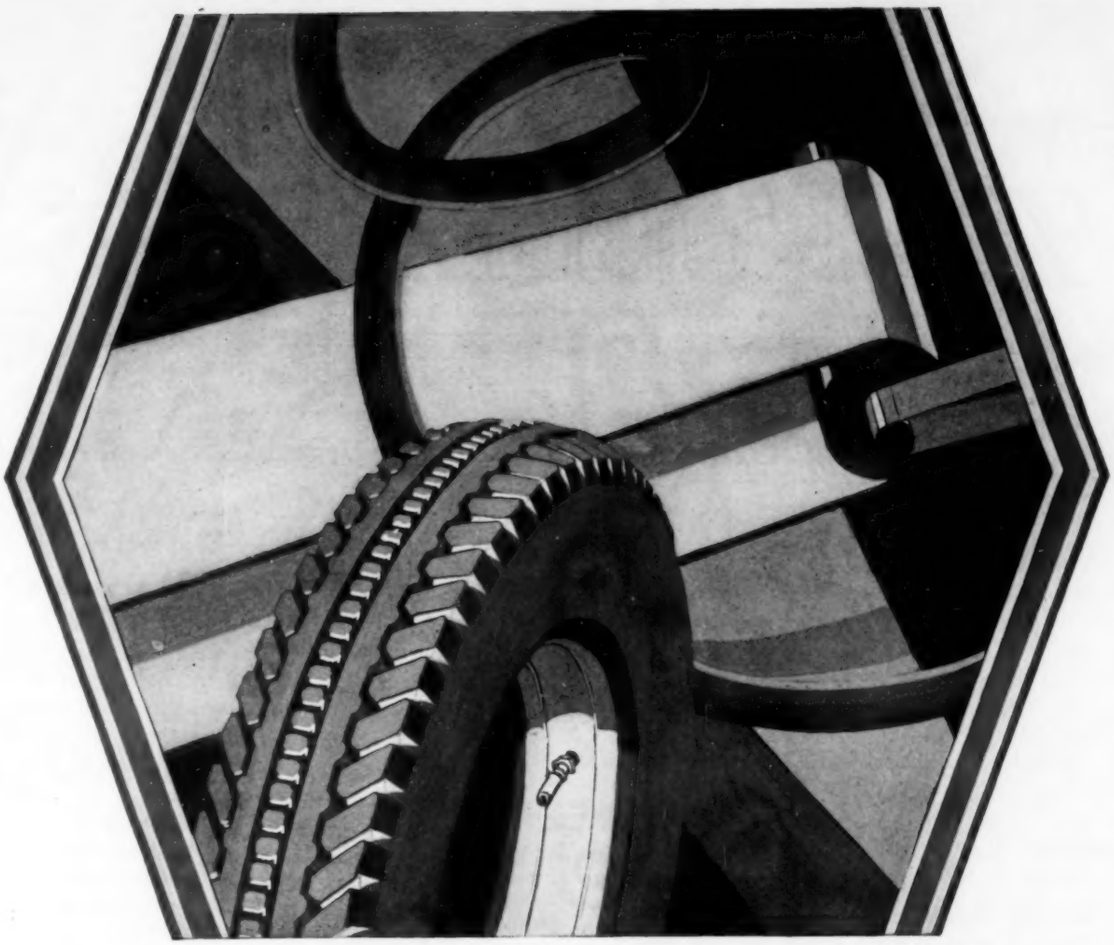

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